

A42669701

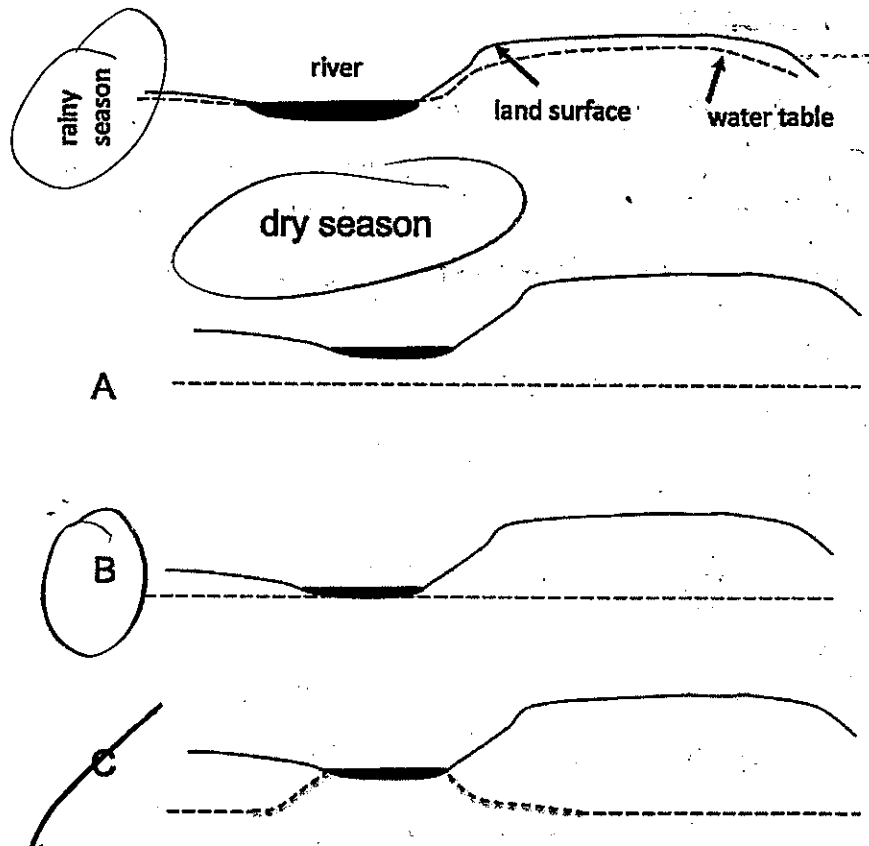
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:

- a. been greater
b. been less
c. remained the same

density
ice - 0.9
water - 1.0

10. What happens when plants respire?

- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

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SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water

Water begins as ice in a glacier. Thermal energy (solar radiation) causes sublimation: the water molecule is now vapor in the atmosphere.

~~water~~ The vapor cools and condenses and is now liquid in a cloud.

Gravitational energy causes liquid water in a cloud to become liquid water on the surface (precipitation). Gravitational energy causes

liquid water on surface to infiltrate the ground and become liquid groundwater.

The liquid water rises to a plant through evotranspiration, and is then consumed during the process of photosynthesis to become part of the plant's biomass.

25

A42669701

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

Thermohaline circulation occurs because of the spherical shape of the Earth. This causes differential heating, in which water near the equator receives more solar radiation than water near the poles. Thus solar radiation causes the movement and transformation of water. Hot water is less dense than cold water, and thus rises while cold water falls. Hot water near the equator has ↑ thermal energy, stays near surface as long as it's hot, and moves towards the poles. When it loses its thermal energy near the poles, it falls, and moves towards the equator where it receives ↑ thermal energy and cycles again.

If polar ice had more salt than the surrounding water, it would be more dense than the surrounding water, causing it to sink. This would mean the ice is in the water, rather than floating at the surface. This would allow for more thermal energy to travel from the liquid water to the ice. This would increase the overall volume of water in the oceans (sea level ↑); also, this would decrease the temp. of the polar water, since thermal energy would travel to the ice to reach equilibrium.

Effect on thermohaline circulation

The change in ice would cause an overall ↓ in temp. of ocean water. My suspicion is that the ~~main~~ effect ~~on~~ of this would be a general "slowing" of the cycle of movement of water increases. Most of water in oceans is caused by solar radiation; if the overall temp. of ocean water was lower, it would take more solar radiation to heat the surface water (mostly near equator), ~~and~~ plus more time; this is the first step

2 EXTRA CREDIT (2 points)

- EC. How are burning wood and respiration similar? In thermohaline circ., and would effect
- They both destroy matter during energy conversion
 - They both convert thermal energy into gravitational energy
 - They both convert chemical energy into thermal energy
 - They both convert kinetic energy into potential energy.

40 54

YOUR SCORE:

94

STUDENT ID #: 141944159; GROUP #: 16

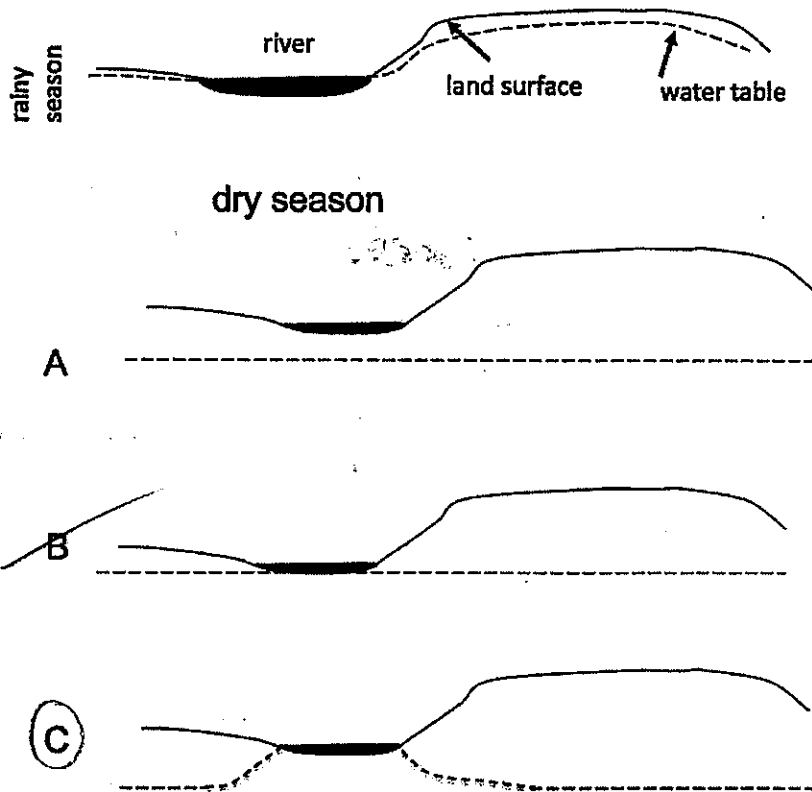
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 8
 - a. Water molecules become larger
 - ☒ b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - ☒ a. The atmosphere
 - ☒ b. Oceans
 - ☒ c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - ☒ a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
 - ☒ a. A= evaporation, B= deposition, C= sublimation
 - ☒ b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - ☒ d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - a. Liquid water from the pot condenses
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 - c. Water vapor from the pot condenses
 - d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - ☒ a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

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- ☒ a. been greater
b. been less
c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
☒ c. Plants release energy

A41961459

ISP 203A: GLOBAL CHANGE

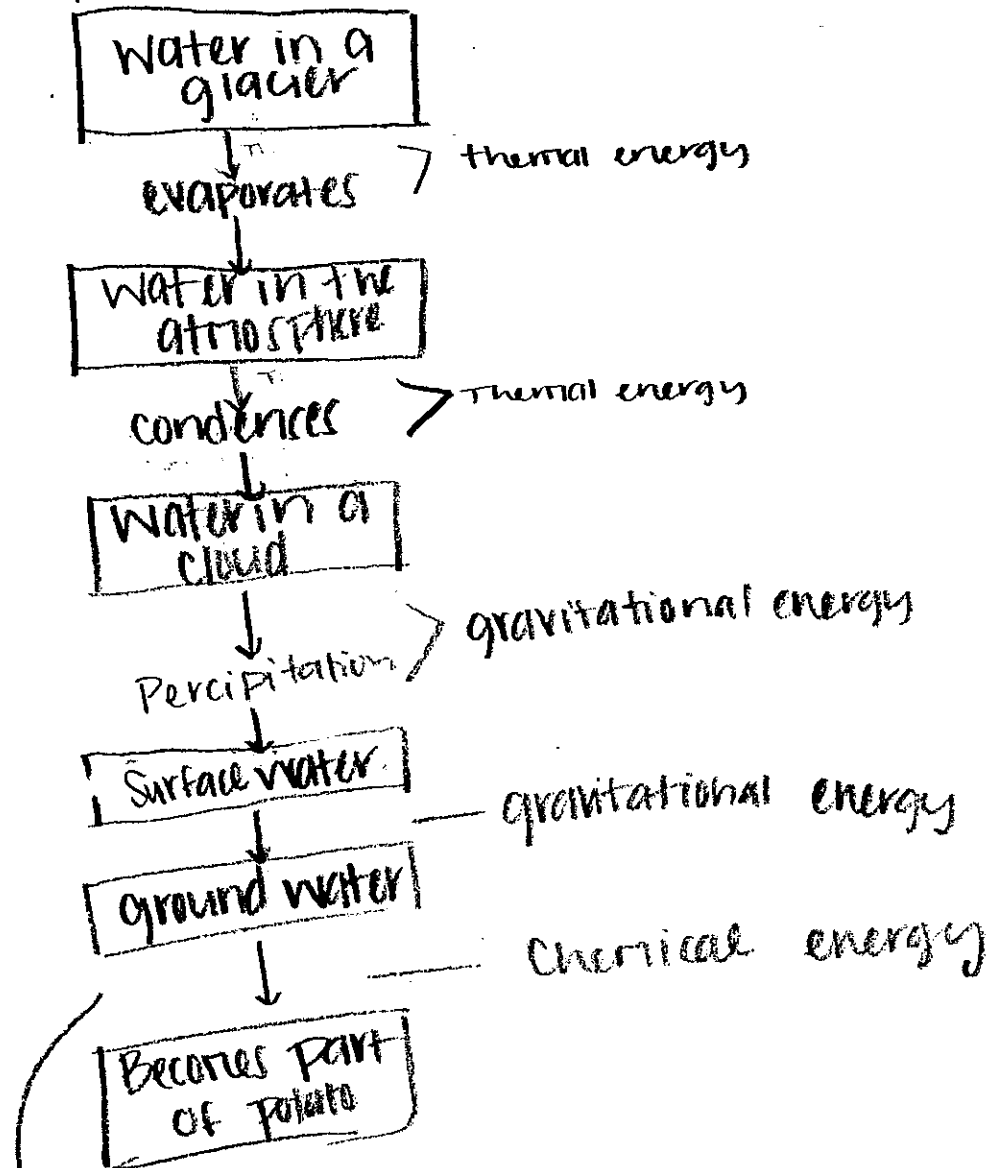
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

3

SHORT ANSWER. 25 points each (50 points total)

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The roots of the potato plant absorb the ground water and make use of that water in the process of making food for the potato plant through chemical energy. The potato plant will also release the water into the atmosphere through evaporation.

A 41944159

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

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If glaciers had a higher salt content than the surrounding seawater a great deal would change.

First of all, the density of the ocean and glacier would change, causing the buoyancy of the glacier within the ocean to change, thereby exposing different parts of the glacier. A higher salt content within the glacier would cause it to be more buoyant than the current, less salty glaciers (like how you feel more buoyant when swimming in the ocean compared to a lake) and therefore, it will sit higher in the water. This added buoyancy will cause a drop in the sea levels, because they require less resistance to keep them afloat.

Current Seawater & glaciers

lower salt seawater / higher salt glaciers



2

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- ☒ They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

40 24

YOUR SCORE:

64

STUDENT ID #: A431451612; GROUP #: 16

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

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a. Water molecules become larger
☒ b. Gaseous water becomes liquid water
~~c. Hydrogen and oxygen atoms combine to form liquid water~~
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. ~~Oceans~~
☒ c. Glaciers
d. ~~Lakes and streams~~
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
~~a. Rainfall and surface runoff into the lake~~
~~b. Seasonal high water from the Mississippi River~~
☒ c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
a. ~~A = evaporation, B = deposition, C = sublimation~~
☒ b. A = condensation, B = precipitation, C = evaporation
~~c. A = sublimation, B = precipitation, C = evaporation~~
~~d. A = precipitation, B = freezing, C = condensation~~
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
a. Liquid water from the pot condenses
b. Liquid water from the pot evaporates
☒ c. Water vapor from the pot condenses
~~d. Water vapor from the pot evaporates~~
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
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~~c. Predictions about global warming do not address global precipitation.~~

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ISP 203A: GLOBAL CHANGE

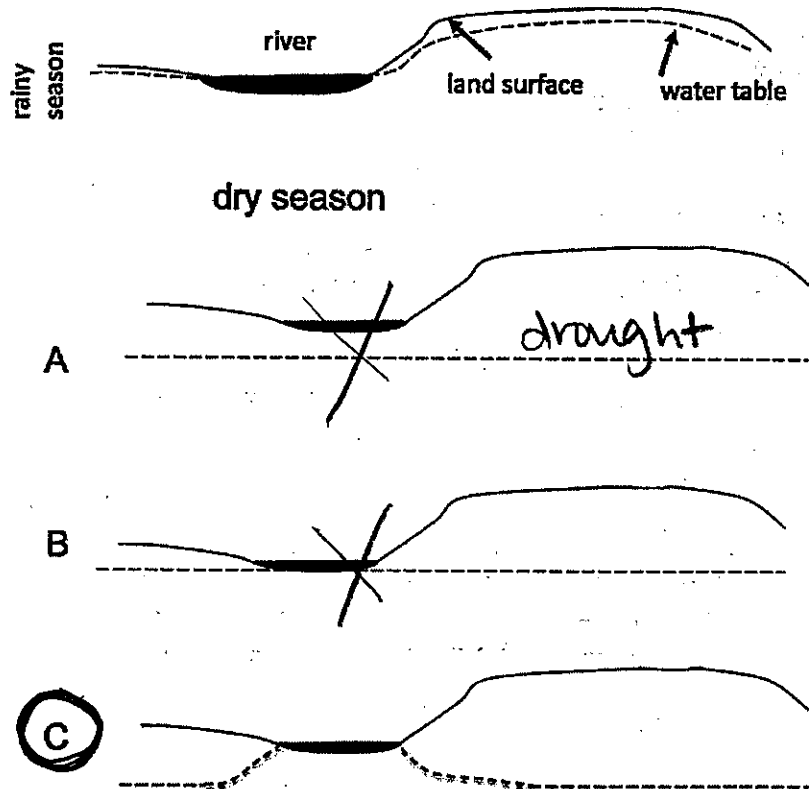
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. ~~A=chemical, B=thermal, C=thermal~~
 b. A = gravitational, B= gravitational, C= thermal
 c. A = gravitational, B= thermal, C= thermal
 d. ~~A= thermal, B= thermal, C= thermal~~

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:

- a. been greater
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10. What happens when plants respire?

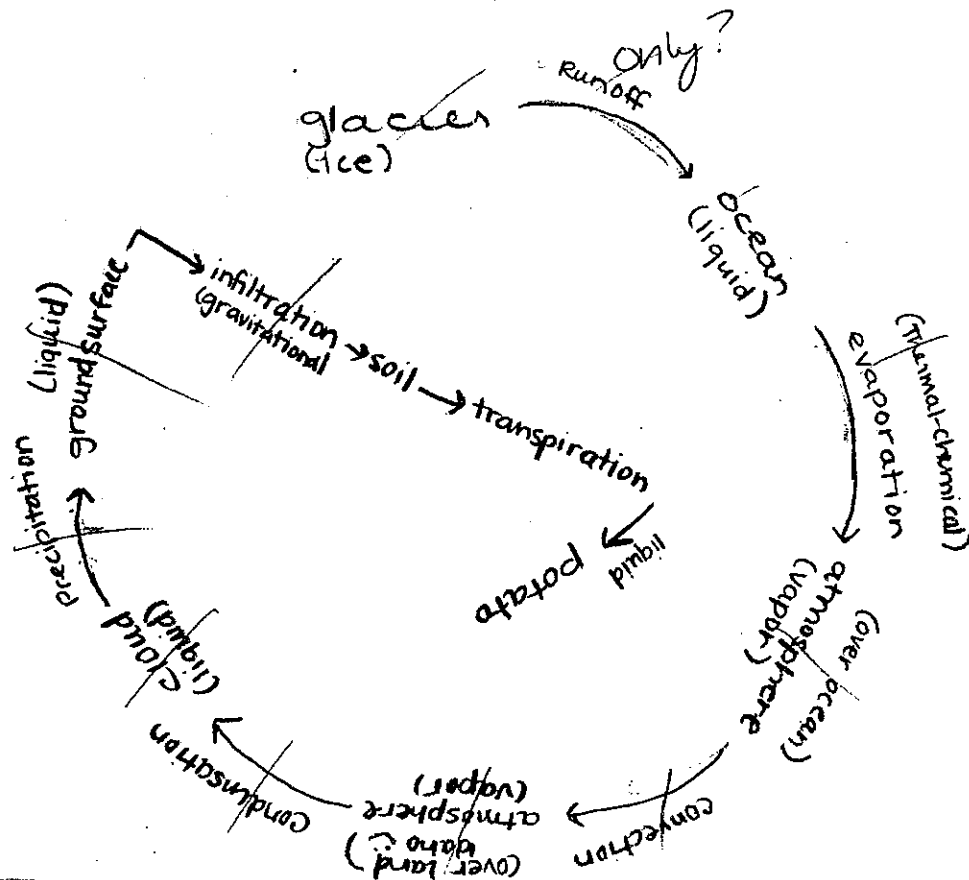
- a. ~~Plants convert biomass into energy~~
 b. ~~Plants convert energy into biomass~~
 c. Plants release energy

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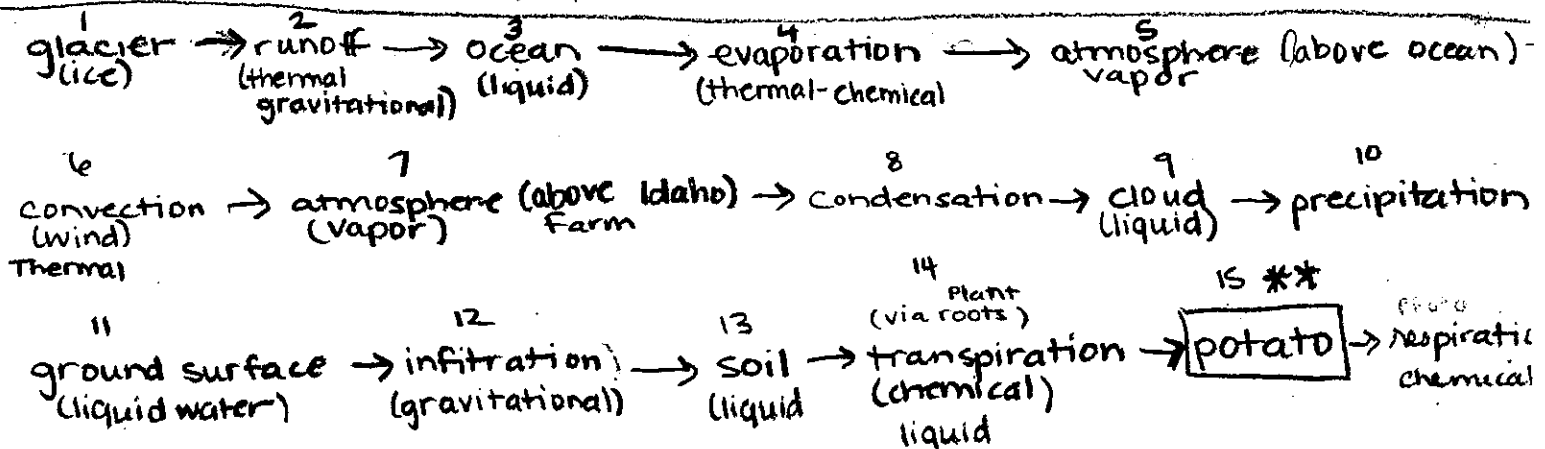
SHORT ANSWER. 25 points each (50 points total)

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- Water phase at each step in the journey
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22



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
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(deep)

Circulation in oceans happens because cold salty water is denser than warm surface water. Water warms at the equator flows toward the poles where it cools and sink creating a conveyor belt of ocean mixing. Both difference in density (caused by heat and salinity) as well as atmospheric influences (wind) cause this function to operate. If polar ice contained more salt than surrounding seawater the density of the remaining sea water may not be enough to sink to the depths necessary to maintain thermohaline circulation. Due to evaporation, water reaching the poles sinks as a result of both increased salinity left over from evaporation as well as cooling. If the salt freezes in the ice the waters density would decrease. I am not positive to what degree it would be interrupt circulation, but seems a though it would certainly cause a disturbance

25

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- ~~They both convert thermal energy into gravitational energy~~
- ☒ They both convert chemical energy into thermal energy
- ~~They both convert kinetic energy into potential energy~~

50 49

YOUR SCORE:

99 ! 3

STUDENT ID #: AU0974799; GROUP #: 16

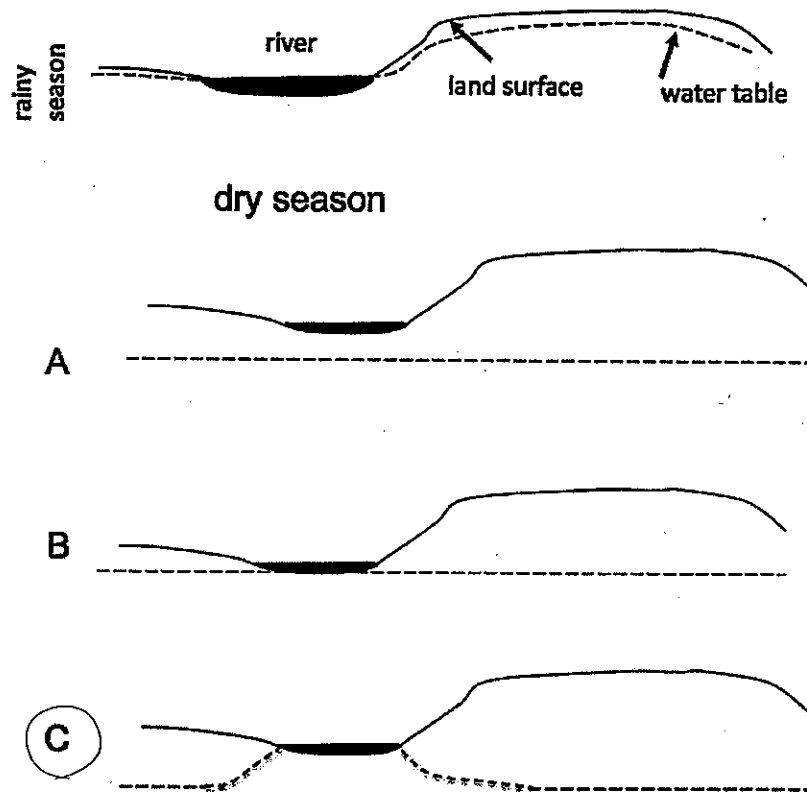
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

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 - a. Water molecules become larger
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 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - ☒ a. The atmosphere
 - ☒ b. Oceans
 - ☒ c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
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 - ☒ a. A= evaporation, B= deposition, C= sublimation
 - ☒ b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - ☒ d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - a. Liquid water from the pot condenses *gas to liquid*
 - ☒ b. Liquid water from the pot evaporates *liquid to gas*
 - c. Water vapor from the pot condenses
 - d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
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7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

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8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0 g/cc . If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
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10. What happens when plants respire?
- a. Plants convert biomass into energy
 b. Plants convert energy into biomass
 c. Plants release energy

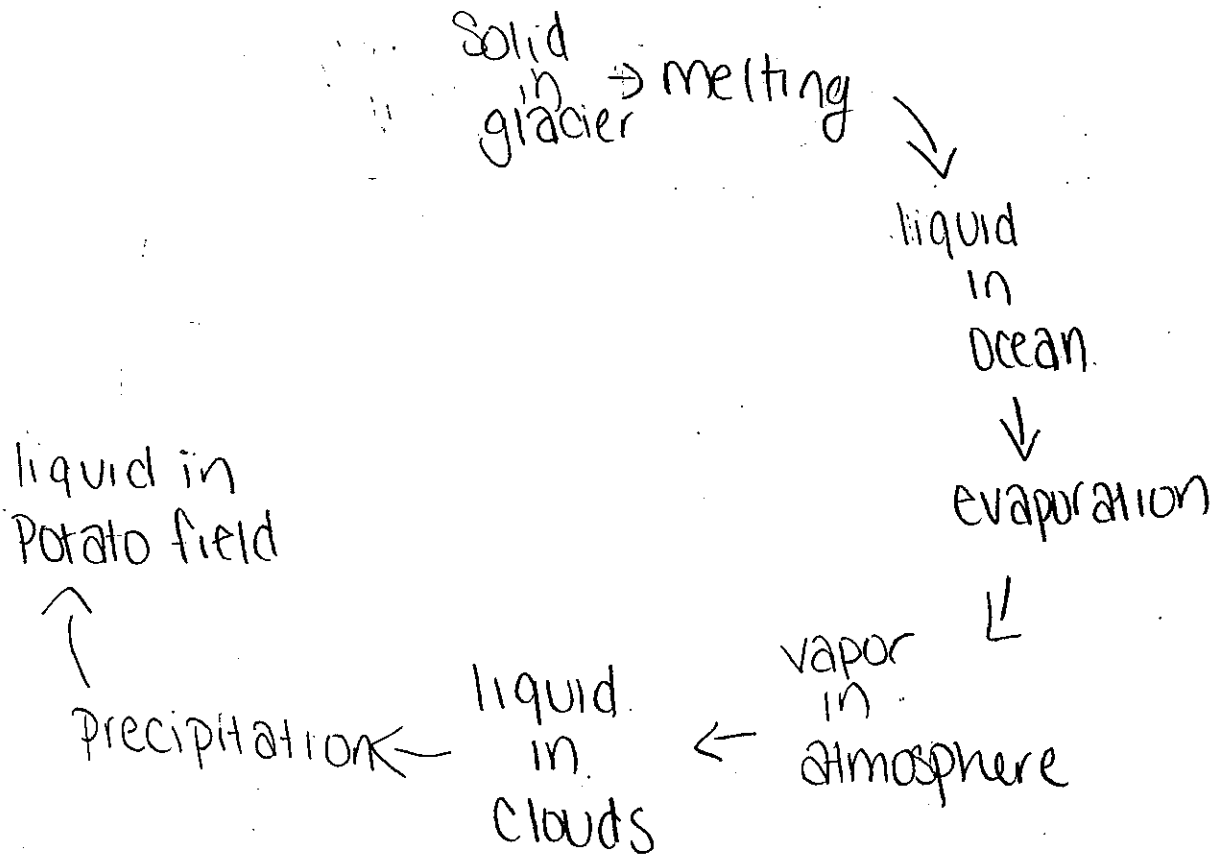
A46974799

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

3

SHORT ANSWER. 25 points each (50 points total)

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25

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ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
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 - b. The energy that is causing movement or transformation of water.

10

If Polar ice contained more salt than the surrounding seawater from which it freezes, it would be more dense than seawater and sink. Then the seawater would rise to the top because it contains less salt than the ice. The seawater moves ^(thermohaline circulation) to the poles to cool down and freezes. Then the ice sinks to the bottom and the ice that was on the bottom rises to the top and melts or evaporates. Then the seawater moves to the poles to cool down and repeat the same steps.

how?

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- a. They both destroy matter during energy conversion
- b. They both convert thermal energy into gravitational energy
- ☒ c. They both convert chemical energy into thermal energy
- d. They both convert kinetic energy into potential energy.

40 37

YOUR SCORE:

77

STUDENT ID #: A37497963; GROUP #: 16

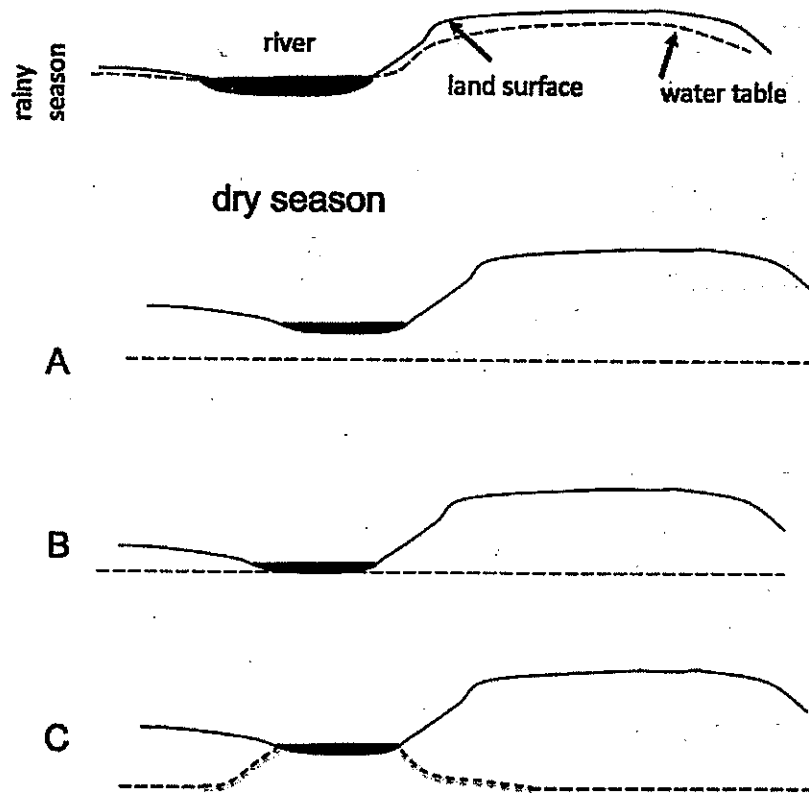
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 - a. Water molecules become larger
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 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - ☒ c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
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4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____A____, then becomes water in a glacier through the process of ____B____, and then becomes water in clouds through the process of ____C____.
 - a. A= evaporation, B= deposition, C= sublimation
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5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
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7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

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8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

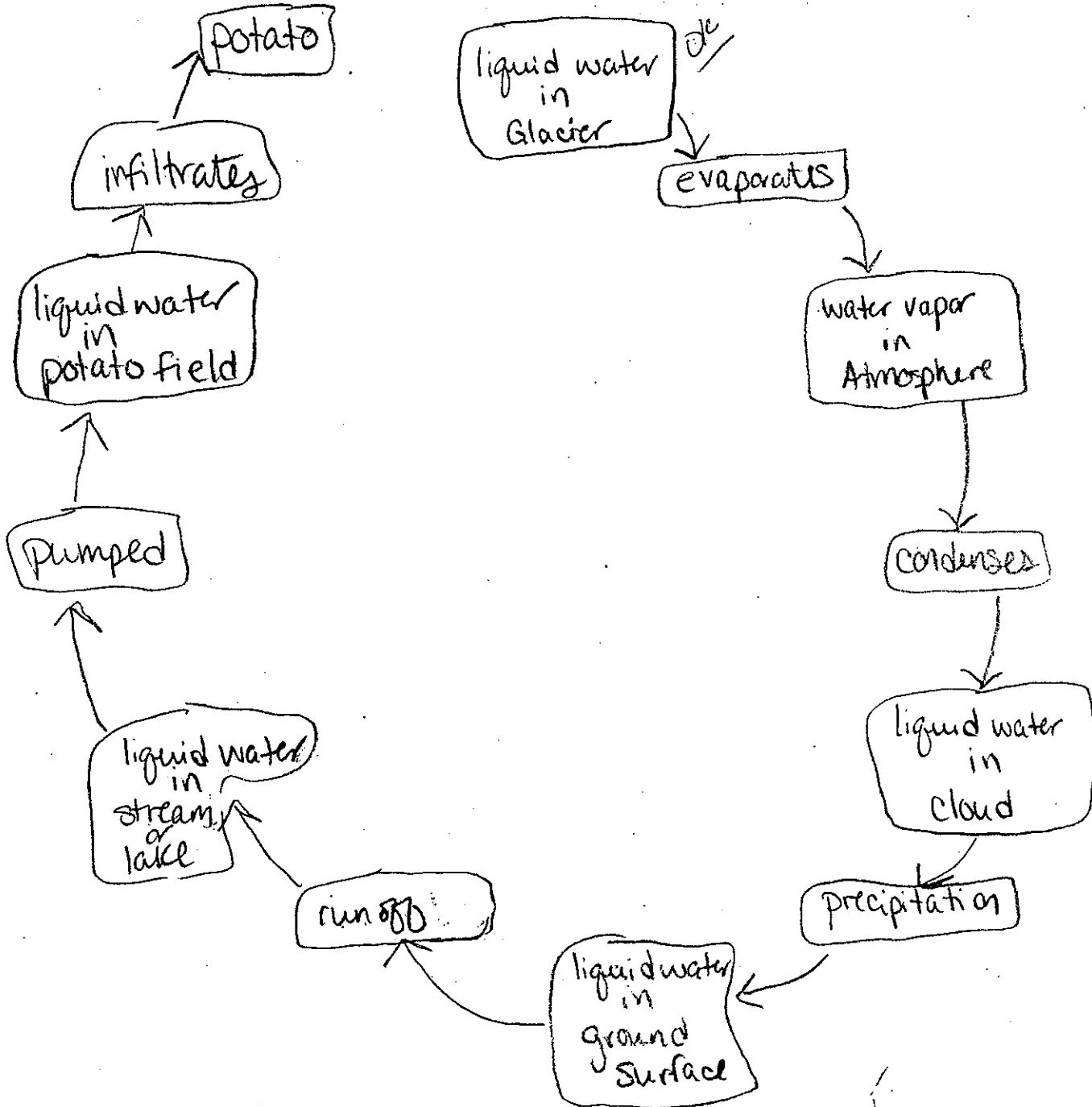


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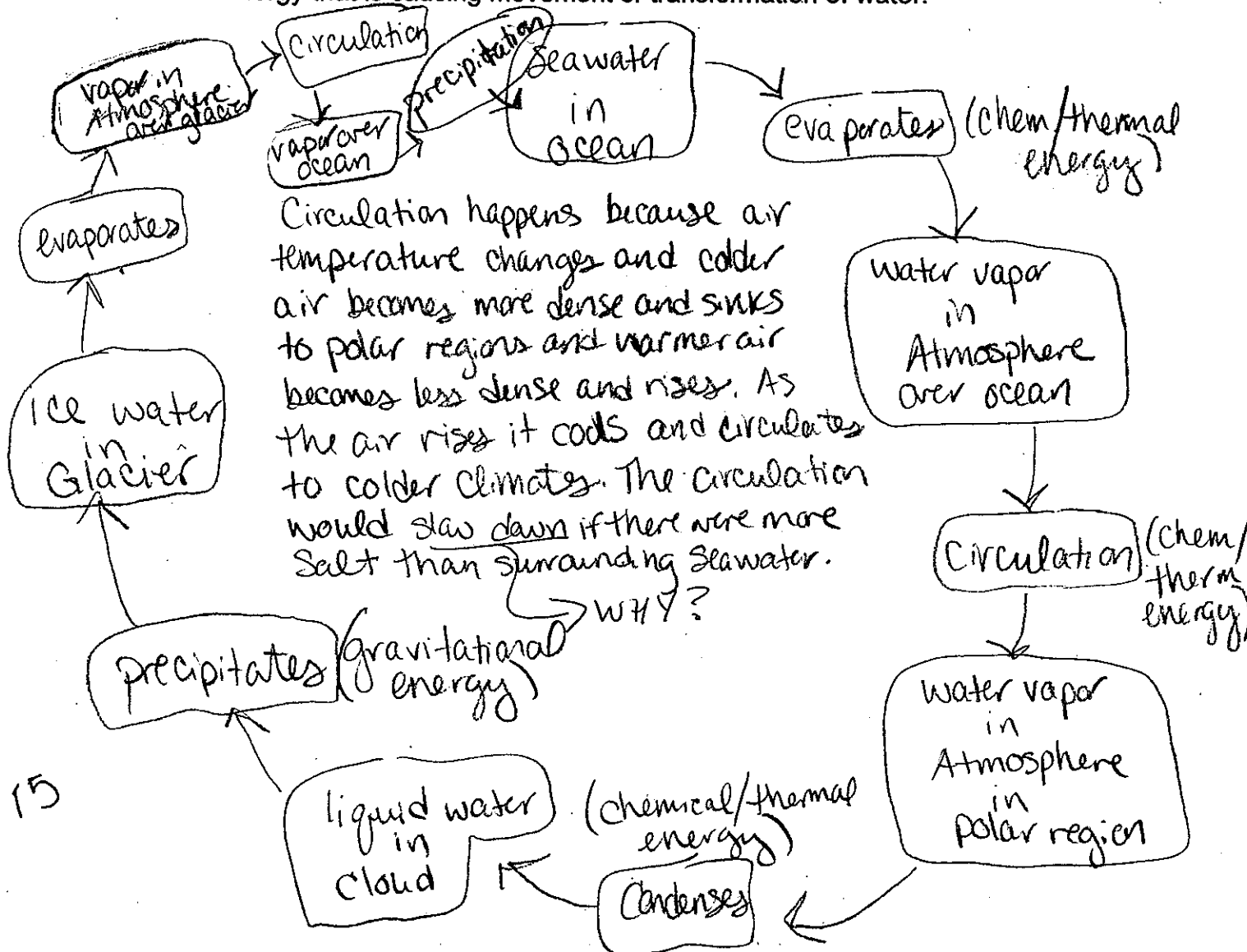
A 37497963

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EXTRA CREDIT (2 points)

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- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

40 40

YOUR SCORE:

80

STUDENT ID #: A42503261; GROUP #: 17

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

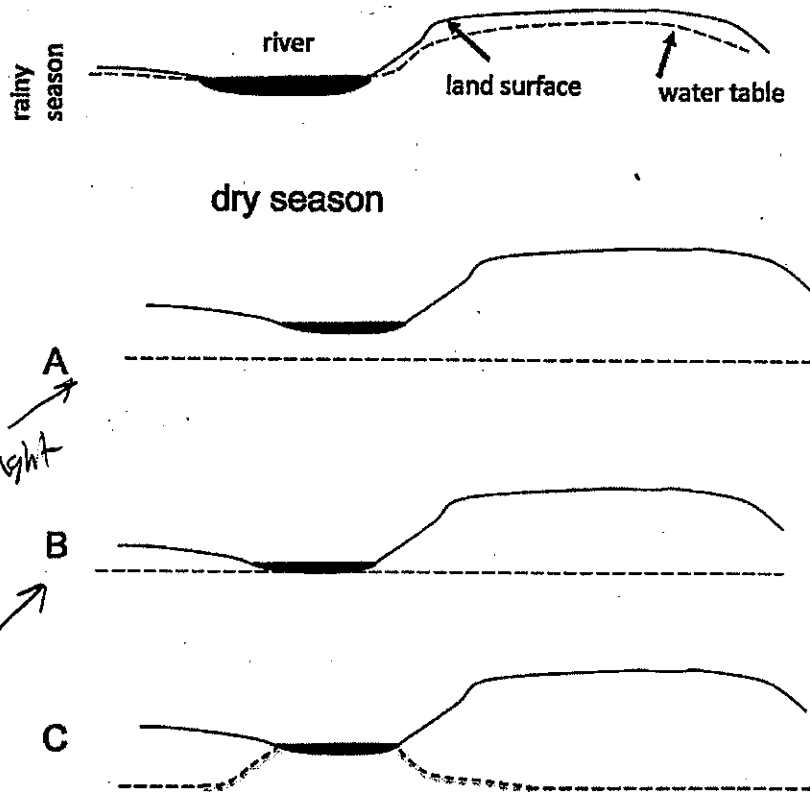
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AR 503261

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- Water phase at each step in the journey
- A name for each process that moves or transforms water

- a. Step 1: A. Glacier Located in Northwest Canada melts due to a heat wave from the Pacific ocean
 Step 2: Water from melted glacier evaporates into the atmosphere
 Step 3: The storm unit from the evaporated water travels southeast hitting most of Canada, the midwest, and eventually finished at Lake Erie. MISSING STEPS
 Step 4: Water is pumped from Lake Erie and used by potato farmer
 Step 5: Potato farmer waters his potato plants.
 Step 6: Water seeps through the ground through a gravitational pull and is absorbed by the potato plant.

- b. Step 1: Thermal Energy causing glacier runoff
 Step 2: Thermal Energy causing evaporation
 Step 3: Condensation has occurred and the storm is moving
 Gravitational pull causes precipitation
 Step 4: no major change
 Step 5: no major change
 Step 6: Gravitational energy forces water into the ground for the plant.

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

as. The density of ice would increase because of the increase in salt composition thus would cause the water table to rise and the water cycle to increase. The reason is the water is less dense than the ice causing it to rise. The rise in water would bring it closer to sunlight causing more evaporation and an increase in the water cycle rate. This would also cause an increase in temperature because thermal energy drives the water cycle.

2

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

20 17

YOUR SCORE:

37

See me

Wolford

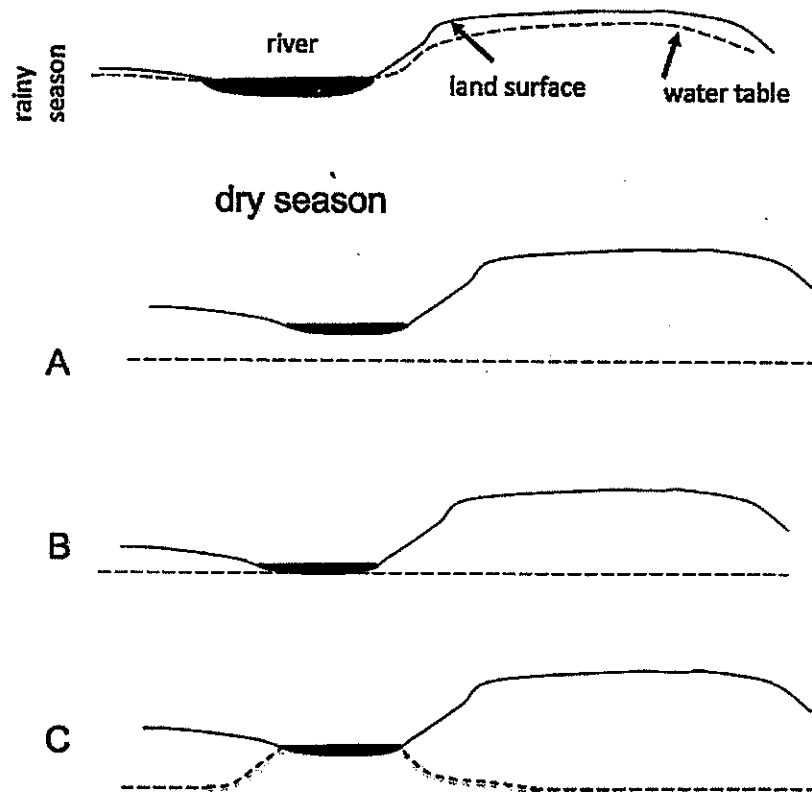
STUDENT ID #: A41727610; GROUP #: 17**MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.**

1. What happens when water molecules condense? 7
- ☒ a. Water molecules become larger
 - ☐ b. Gaseous water becomes liquid water
 - ☐ c. Hydrogen and oxygen atoms combine to form liquid water
 - ☐ d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
- ☐ a. The atmosphere
 - ☐ b. Oceans
 - ☐ c. Glaciers
 - ☐ d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
- ☐ a. Rainfall and surface runoff into the lake
 - ☐ b. Seasonal high water from the Mississippi River
 - ☐ c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
- ☒ a. A= evaporation, B= deposition, C= sublimation
 - ☐ b. A = condensation, B= precipitation, C= evaporation
 - ☐ c. A= sublimation, B= precipitation, C= evaporation
 - ☒ d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
- ☐ a. Liquid water from the pot condenses
 - ☐ b. Liquid water from the pot evaporates
 - ☐ c. Water vapor from the pot condenses
 - ☐ d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
- ☐ a. This is what one would predict with global warming
 - ☐ b. This is the opposite of what one would predict with global warming
 - ☐ c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- ☒ a. A = chemical, B = thermal, C = thermal
☐ b. A = gravitational, B = gravitational, C = thermal
☐ c. A = gravitational, B = thermal, C = thermal
☒ d. A = thermal, B = thermal, C = thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

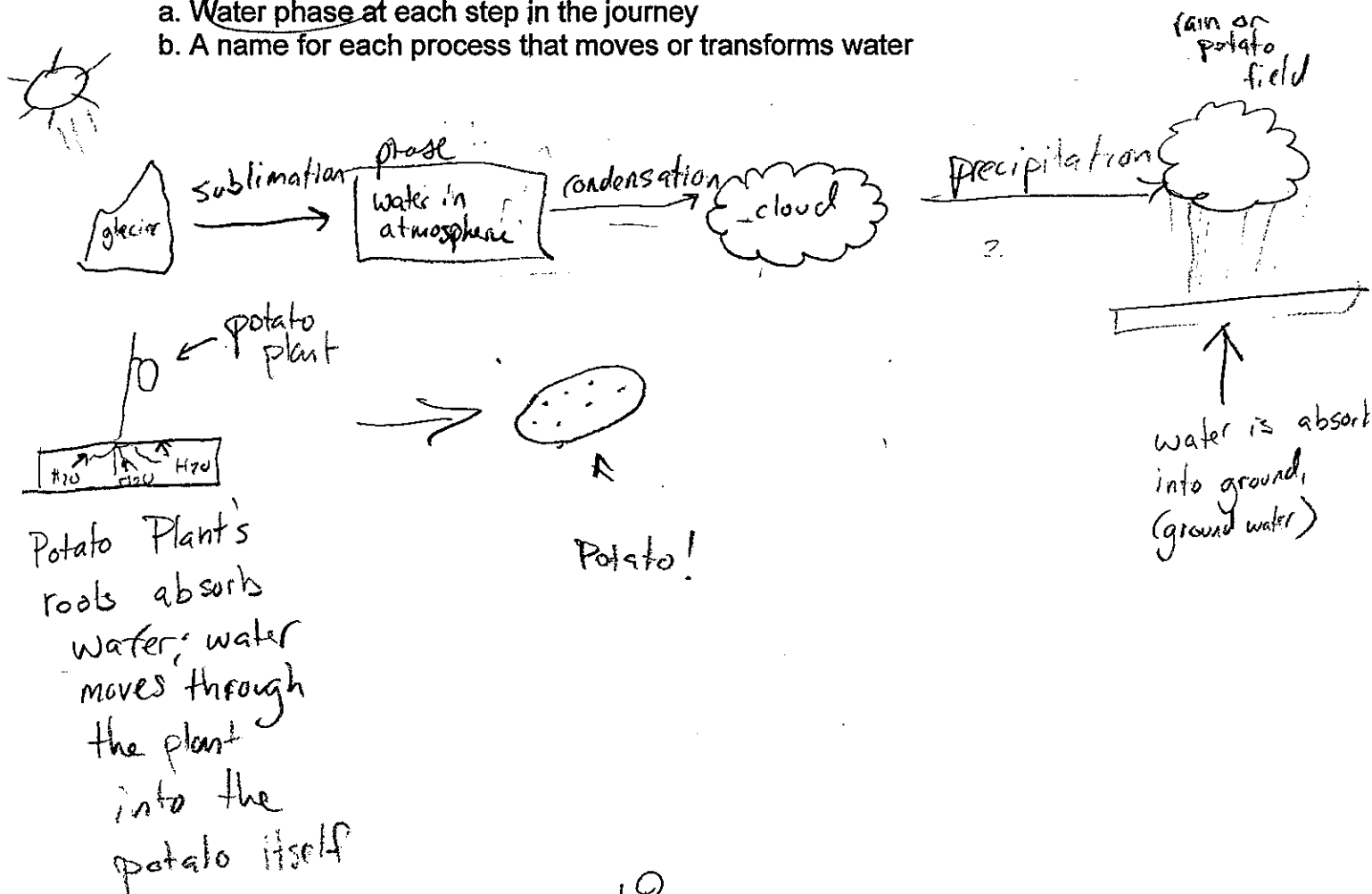


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
b. been less
c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

Circulation happens due to the density and temperature of water. The salinity (salt level) of water affects the density of water. When the water is heated, cold water sinks to the bottom and the warm water moves with the currents. ^{why?} If polar ice had more salt than sea water, then as it melts the ocean would be filled with more salt. Also, the now more dense freshly melted salt water would sink to the bottom, because it has more salt in it than the rest of the seawater.

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

35 30

YOUR SCORE:

65

STUDENT ID #: A43030607; GROUP #: 18

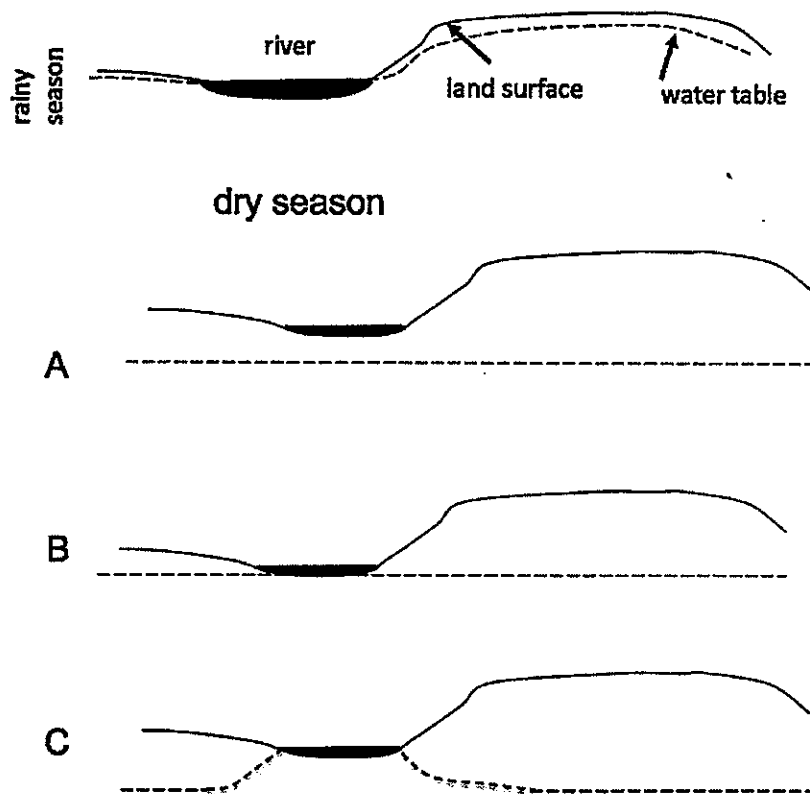
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 8
 - a. Water molecules become larger
 - b. Gaseous water becomes liquid water
 - ☒ c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - ☒ c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - ☒ a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - ☒ c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____A____, then becomes water in a glacier through the process of ____B____, and then becomes water in clouds through the process of ____C____.
 - a. A= evaporation, B= deposition, C= sublimation
 - b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - a. Liquid water from the pot condenses
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 - c. Water vapor from the pot condenses
 - d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - ☒ a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

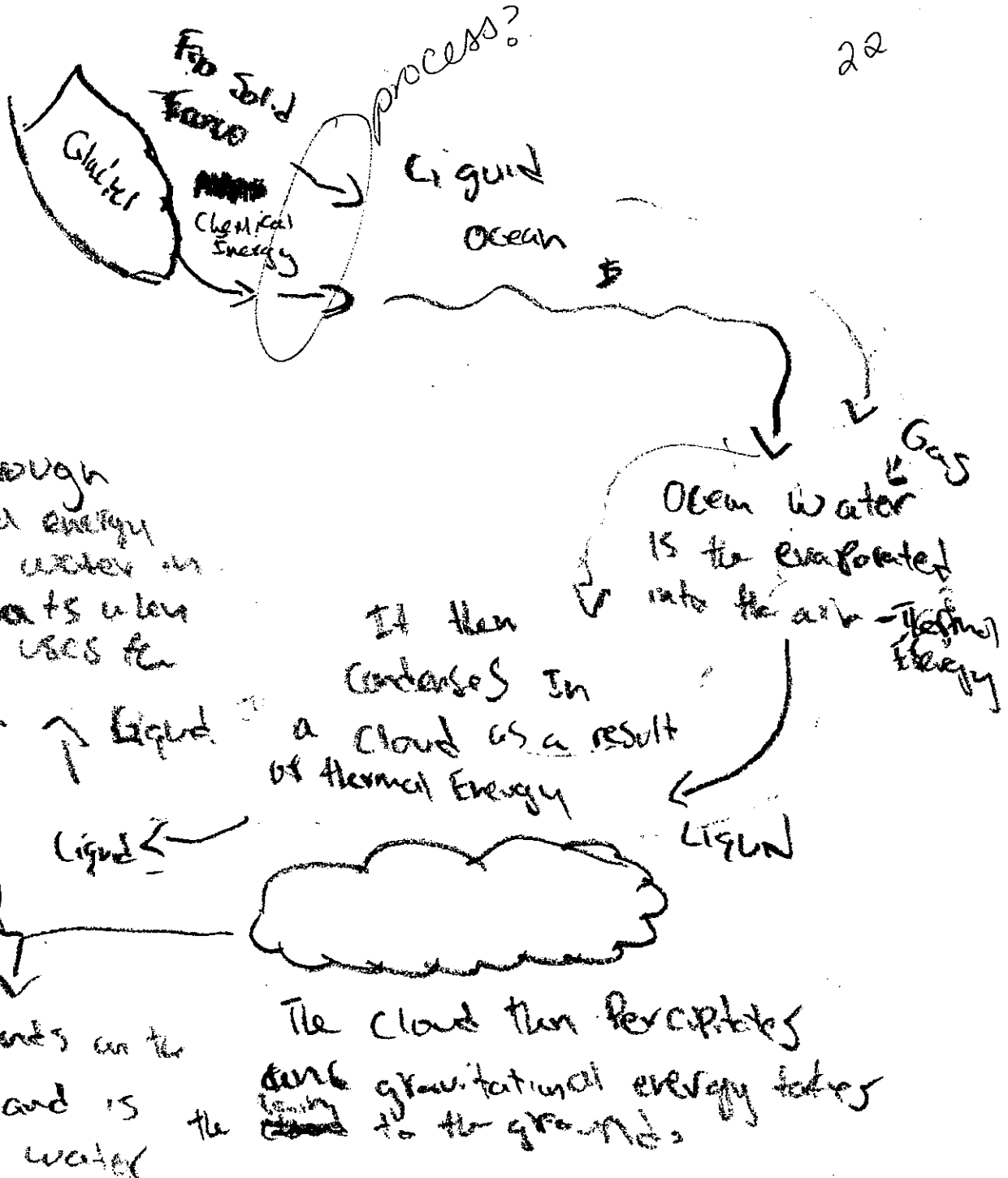
8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
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2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
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 - The energy that is causing movement or transformation of water.

~~Surrounding~~ Surrounding sea-water has more ~~it~~ is more dense, ~~more~~ because there is more salt in it. The ~~dense~~ density is not only from the salt but from other particles that are in the water. This is also why it doesn't freeze, ~~the water~~. The polar ice is frozen because it is the top of the water the part that is the least dense, contains the least amount of salt and the least amount of other particles. For the thermohaline circulation to change salt and other particles in the water would have to be evenly distributed throughout the depths, and if that were the case I doubt any part of the water would freeze because the parts that do have ~~the~~ some but very small amounts of salt and whatever else is in the water.

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

40 29

YOUR SCORE:

69

STUDENT ID #: A41417295; GROUP #: 18

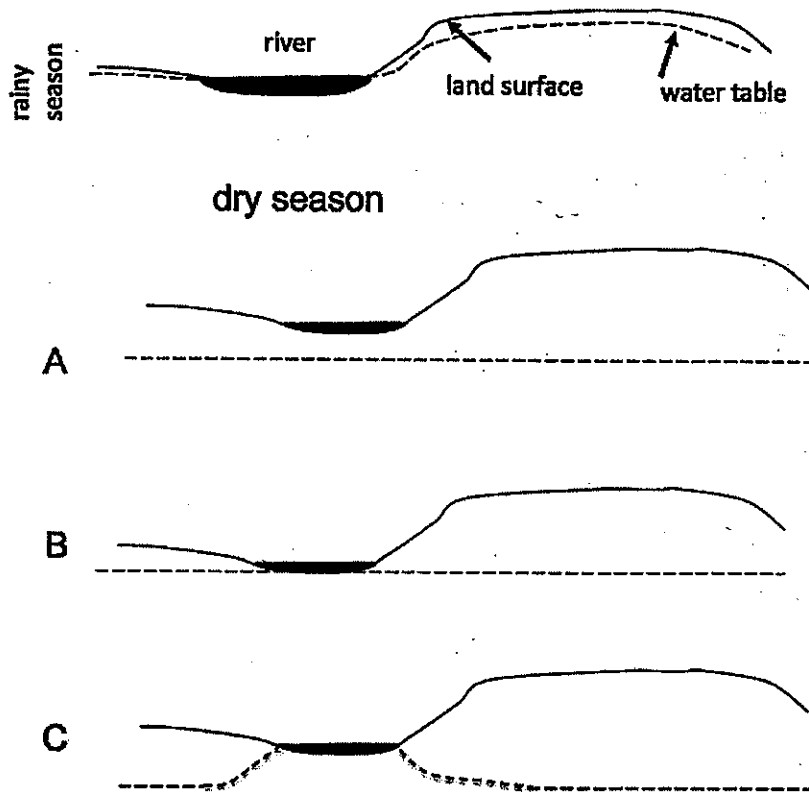
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

- 9
1. What happens when water molecules condense?
 - a. Water molecules become larger
 - b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
 2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - c. Glaciers
 - d. Lakes and streams
 3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - a. Rainfall and surface runoff into the lake
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 - c. Ground water from beneath the surface
 4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
 - a. A= evaporation, B= deposition, C= sublimation
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 - c. A= sublimation, B= precipitation, C= evaporation
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7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

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c. A = gravitational, B = thermal, C = thermal
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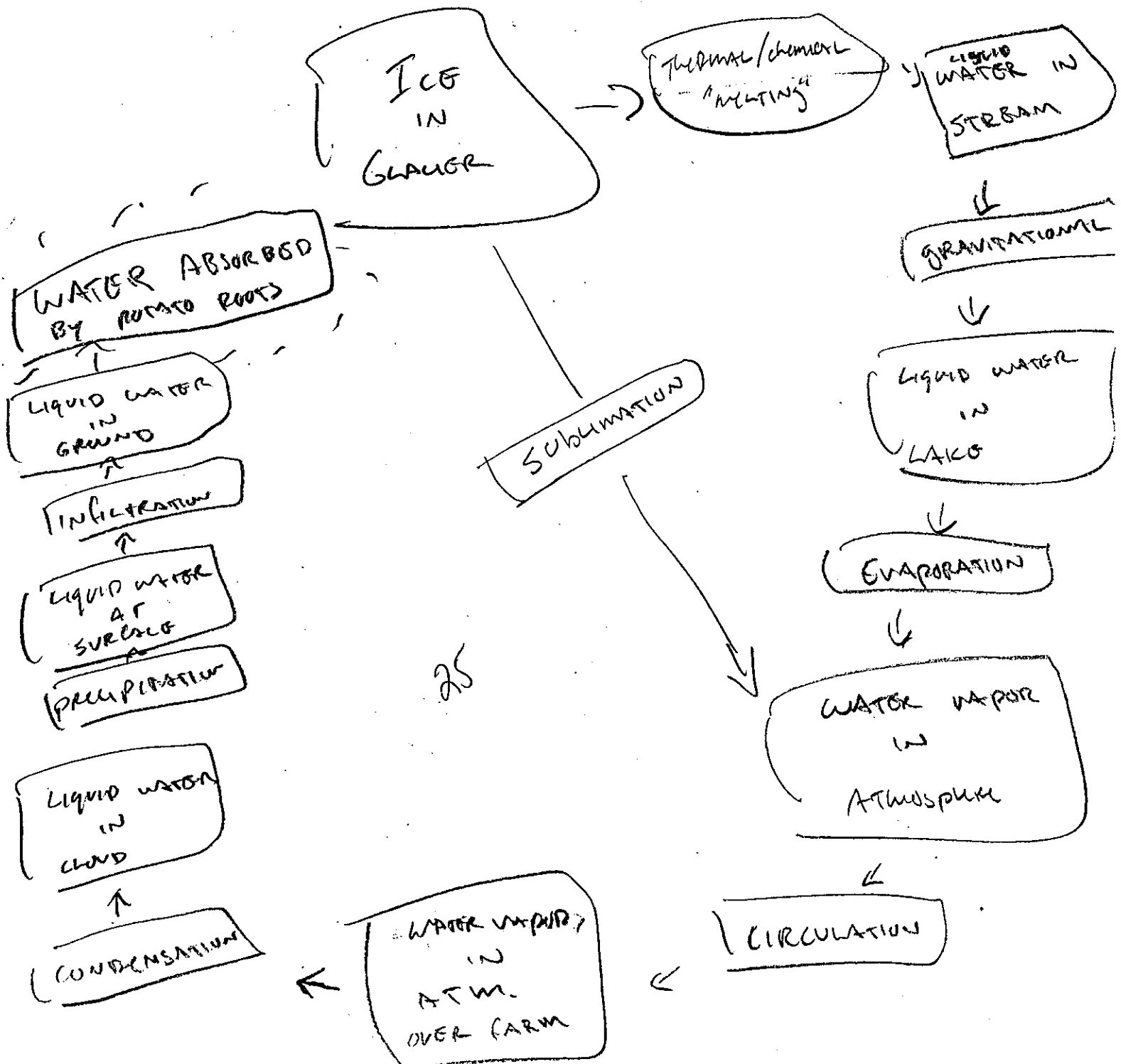
8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
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CIRCULATION IS CAUSED BY DIFFERENT DENSITIES OF WATER. WATER DENSITY CHANGES BY TEMP. & SALINITY CONTENT. COOLER WATER IS MORE DENSE THAN WARMER WATER, & WATER W/ MORE SALT IS MORE DENSE THAN WATER W/ LESS SALT.

IF ICE AT THE POLES ABSORBED SALT FROM THE SURROUNDING WATER, IT WOULD REDUCE THE DENSITY OF THAT WATER. BECAUSE THAT WATER IS COOLER THAN WATER IN THE EQUATORIAL REGION THERE WOULD STILL BE CIRCULATION, BUT IT WOULD BE SLOWER BECAUSE THE DIFFERENCE IN DENSITY BTW! THE PREVIOUSLY SALTY COLD WATER VS. THE NOW JUST COLD WATER IS LESS WHEN COMPARED TO THE WARM WATER.

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

45 37

YOUR SCORE:

82

STUDENT ID #: A42257459; GROUP #: 19

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 6
 - a. Water molecules become larger
 - ☒ b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - ☒ c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
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 - ☒ c. Ground water from beneath the surface
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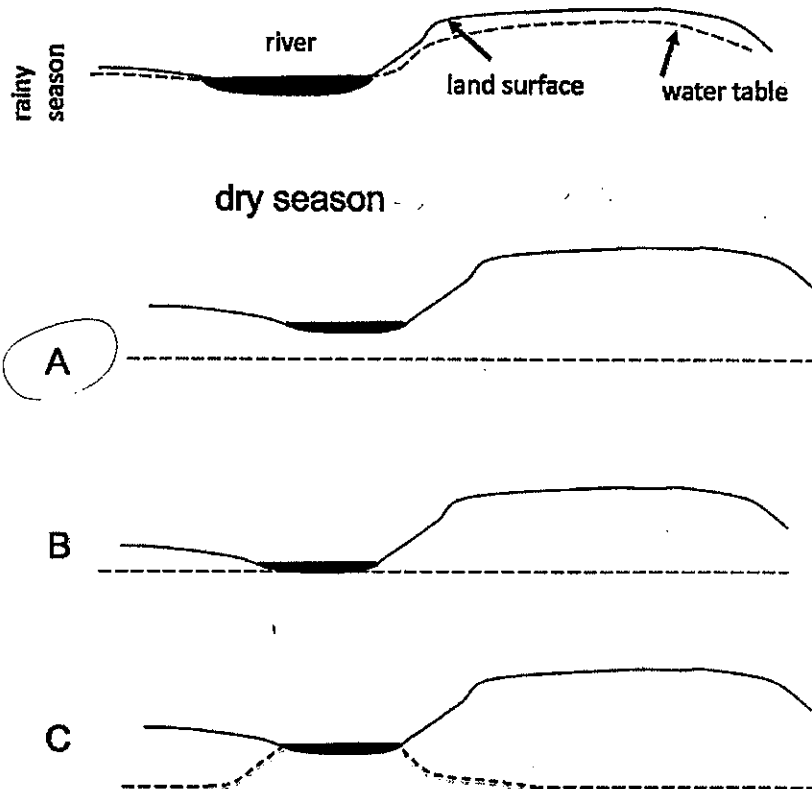
A422 57427

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

LACK-OF?

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



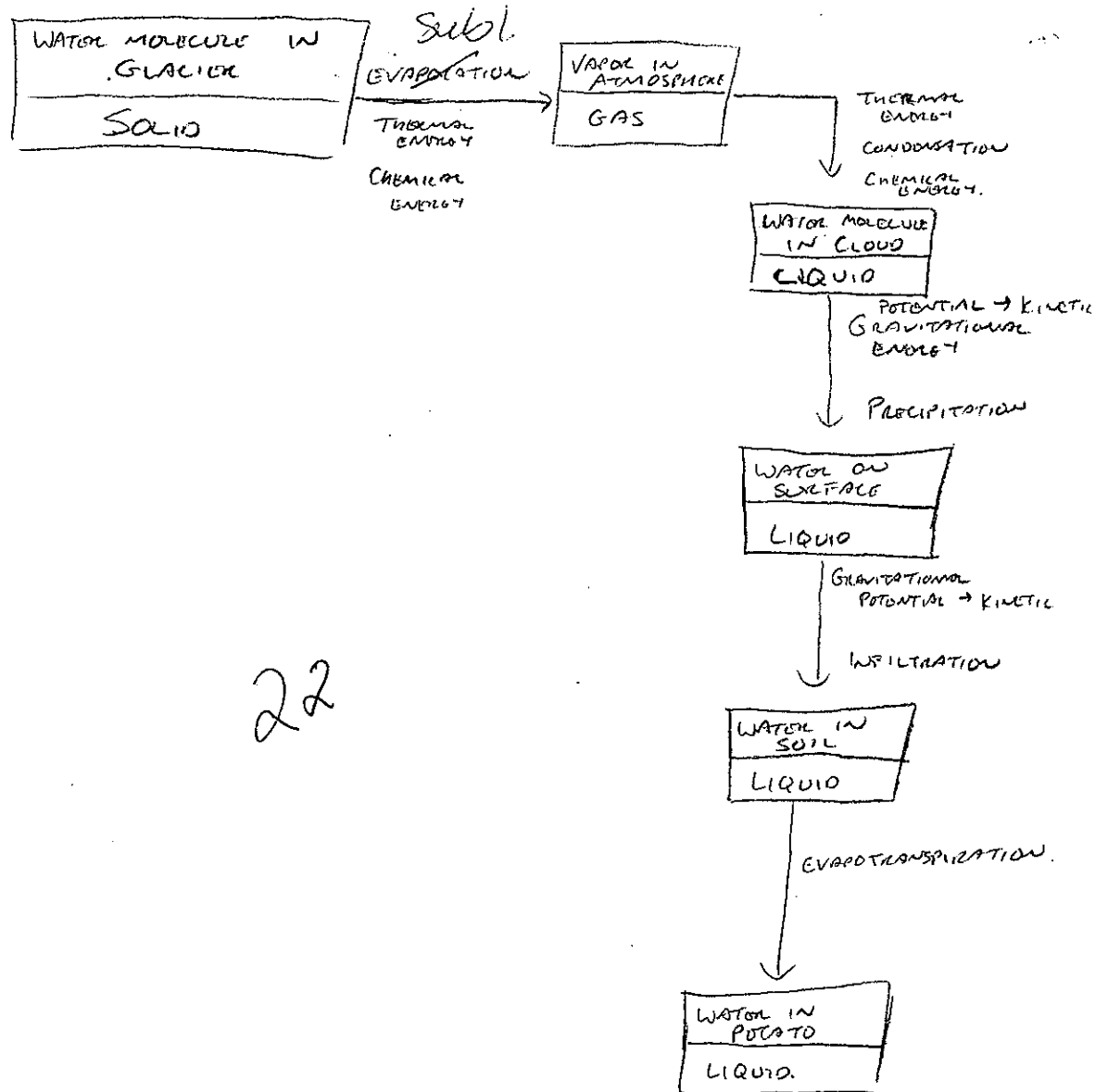
9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
b. been less
c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

A42257459

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

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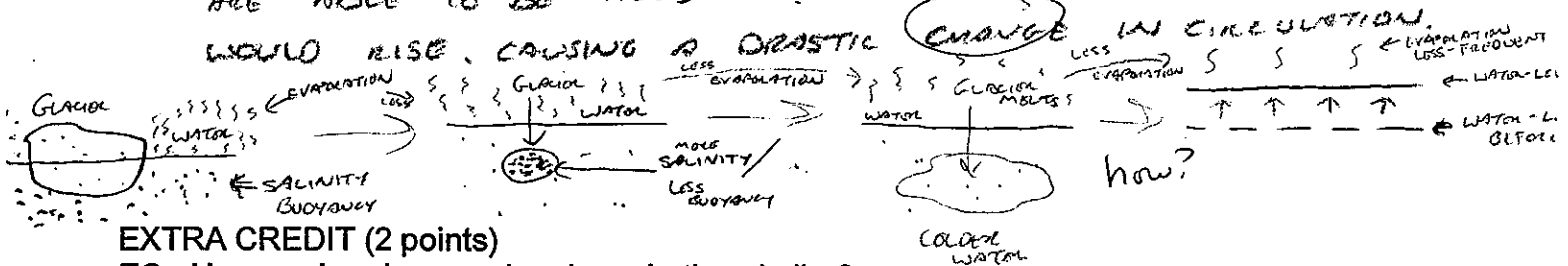
22

A42257459

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

If ice were to contain more salt than the surrounding seawater from which it freezes, this would change thermohaline circulation in oceans in that the ice would not be more buoyant than the surrounding seawater. This would mean that the ice would sink instead of float on the ocean surface. Because of the sinking of the glacier, the bottom of the ocean would become much cooler than the water on the ocean surface. The lack of buoyancy + salinity within the seawater would not be able to support the weight of the glacier if the surrounding seawater were less saline than the glacier. By the ocean floor cooling even more than normal, it would cause the ocean temperatures to drop across the world, which would possibly decrease evaporation due to a lack of the necessary amount of thermal energy provided by the sun. This would result in less rainfall + the ocean levels to rise + may also lead to a new ice age. Because the glaciers in our current system do not contain more salt than the surrounding sea-water, they are less dense + because of the salinity + buoyancy of the oceans, the glaciers are able to be "held-up". Should the glaciers sink, oceans would rise, causing a drastic change in circulation.



EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

30 34
YOUR SCORE:

64

STUDENT ID #: 40749278; GROUP #: 19

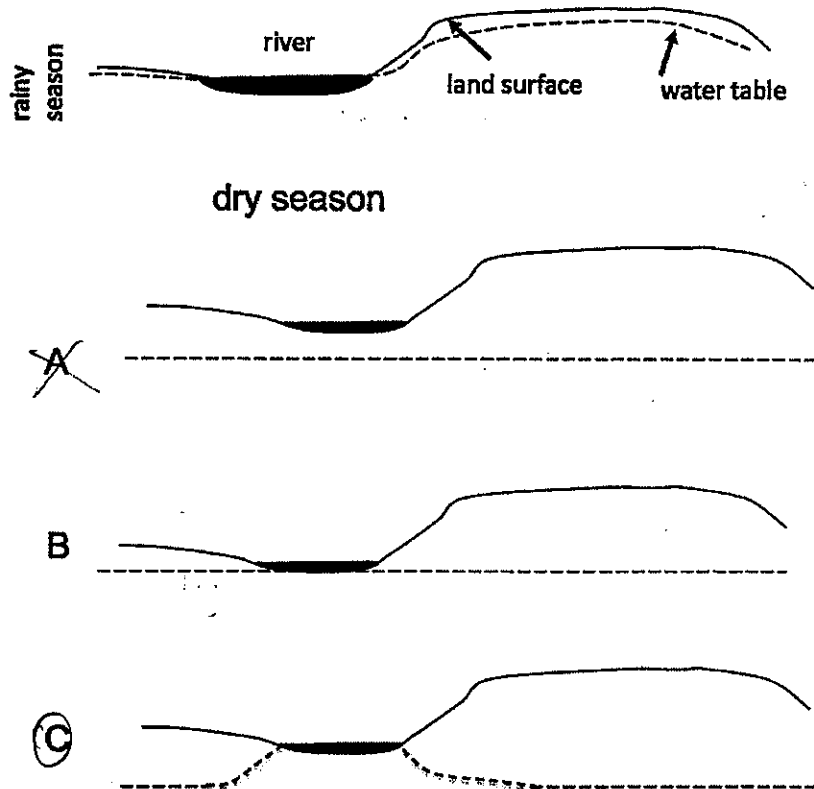
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

- 7
1. What happens when water molecules condense?
a. Water molecules become larger
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c. Hydrogen and oxygen atoms combine to form liquid water
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 4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A cond., then becomes water in a glacier through the process of B precip and then becomes water in clouds through the process of C evapor.
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☒ b. A = condensation, B= precipitation, C= evaporation
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b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A grav. energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
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10. What happens when plants respire?
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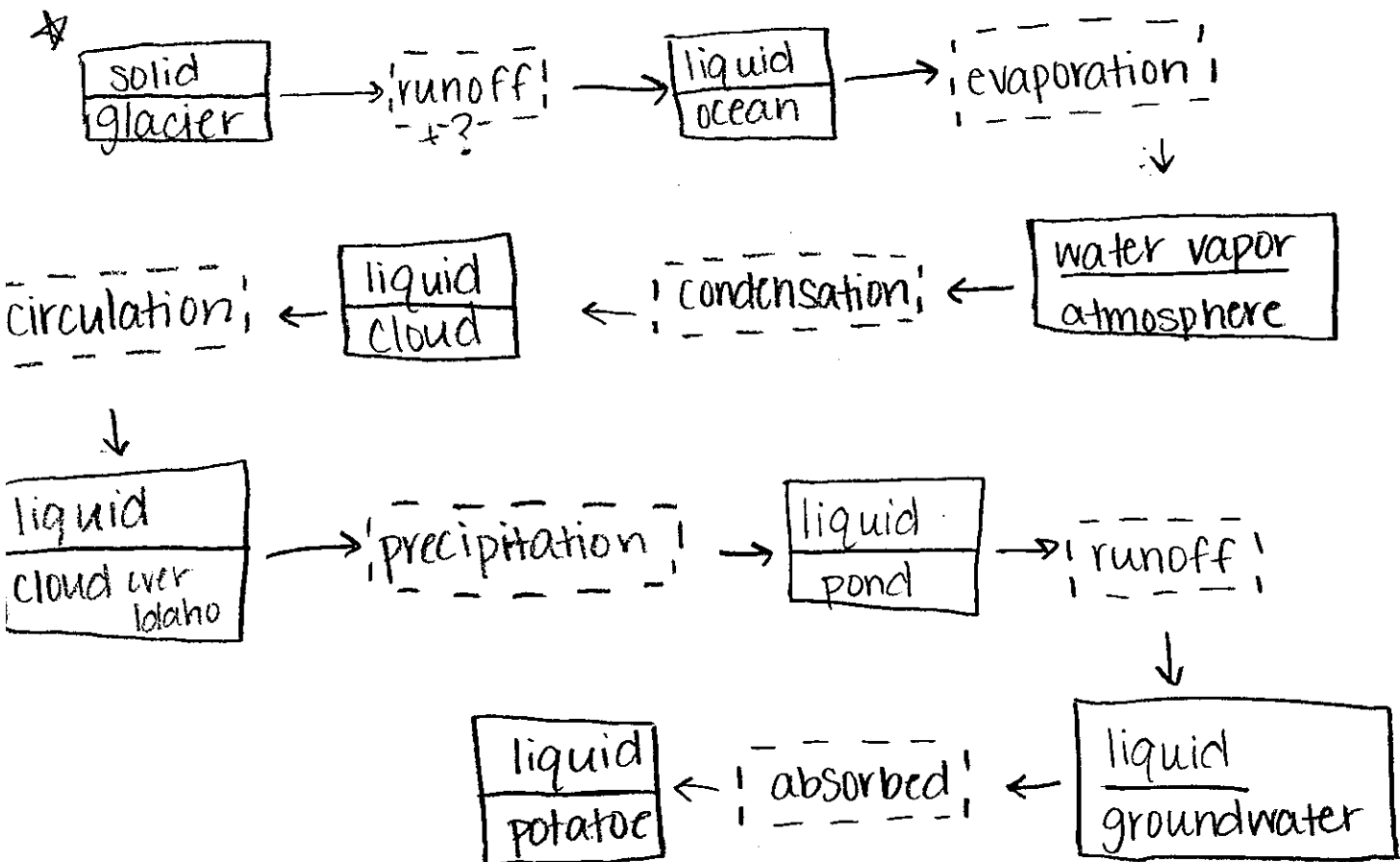
SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water

glacier → potatoe

glacier → ocean → cloud → cloud over Idaho → precip → groundwater

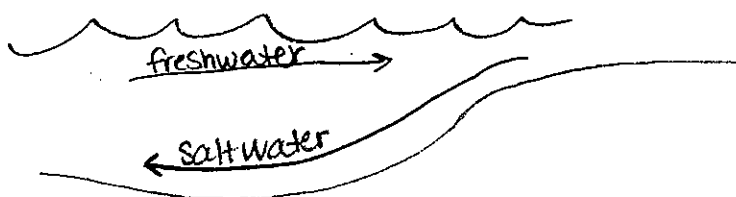


2. When ice forms from seawater, the ice contains less salt than the remaining water.

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- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

salt water is more dense than freshwater so the less salty water remains closer to the top. Since it is closer to the surface, the more likely it is to freeze, therefore freezing the least salty part.



The water circulates because of the currents that are going on in the water. The movement is a gravitational change of movement between the two types of water. If water was saltier, it would be more difficult to freeze than if it were freshwater without the density of salt.

5

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- ☒ They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

35 30

YOUR SCORE:

65

STUDENT ID #: A40272800; GROUP #: 19

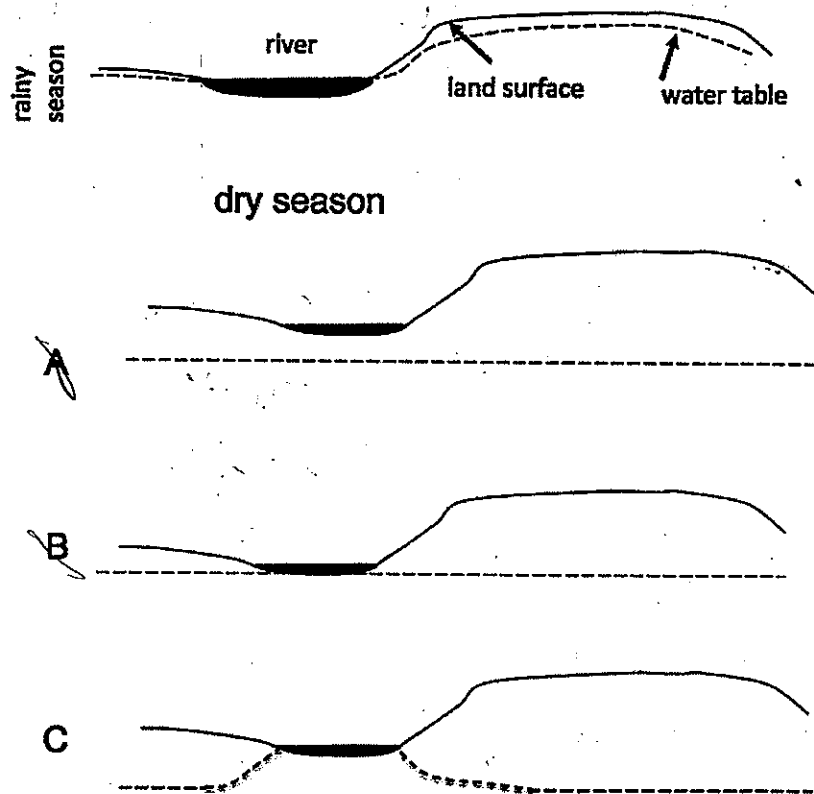
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? *energy release* 8
 - ~~a.~~ Water molecules become larger
 - b. Gaseous water becomes liquid water
 - ~~c.~~ Hydrogen and oxygen atoms combine to form liquid water
 - ~~d.~~ The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of con A, then becomes water in a glacier through the process of precip B, and then becomes water in clouds through the process of con C.
 - a. A= evaporation, B= deposition, C= sublimation
 - b. A = condensation, B= precipitation, C= evaporation
 - ~~c.~~ A= sublimation, B= precipitation, C= evaporation
 - ~~d.~~ A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - ~~a.~~ Liquid water from the pot condenses
 - ~~b.~~ Liquid water from the pot evaporates
 - c. Water vapor from the pot condenses
 - ~~d.~~ Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of grav A _____ energy. Water in the atmosphere becomes water in clouds as a result of kin B _____ energy. Water in clouds becomes water in the atmosphere as the result of grav C _____ energy.

- ☒ a. A = chemical, B = thermal, C = thermal
- ☐ b. A = gravitational, B = gravitational, C = thermal
- ☐ c. A = gravitational, B = thermal, C = thermal
- ☒ d. A = thermal, B = thermal, C = thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0 g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:

- a. been greater
- b. been less
- c. remained the same

10. What happens when plants respire?

- a. Plants convert biomass into energy
- b. Plants convert energy into biomass
- c. Plants release energy

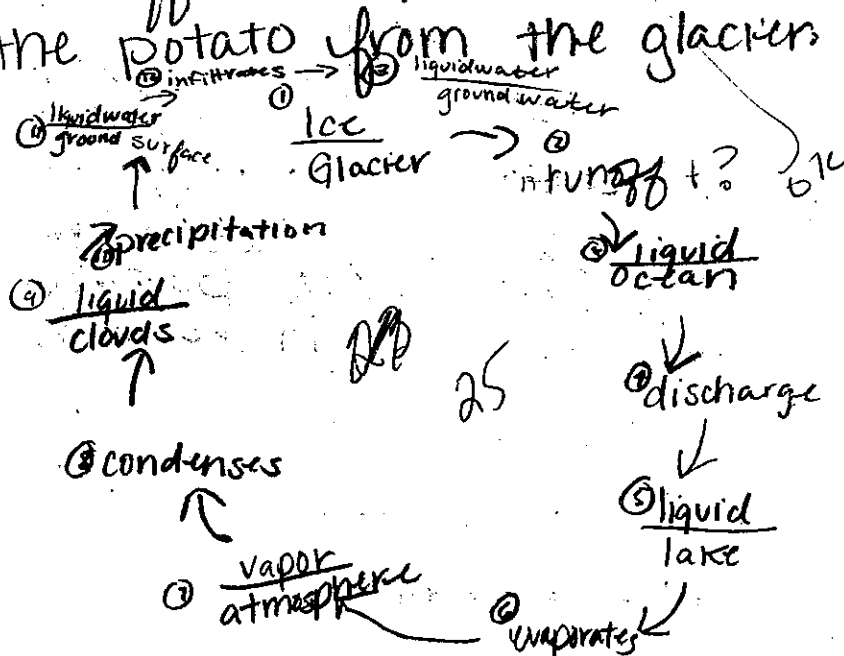
photosynthesis
sugar and O_2 → carbon dioxide + water
ice melt to water do not refreeze

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water

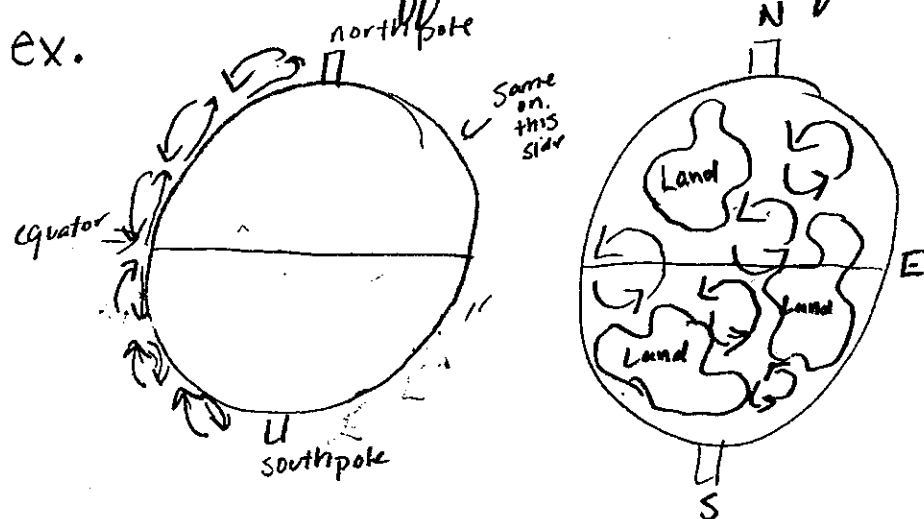
Glaciers have been known to move things like rocks. I believe water molecules could naturally move from a glacier to become part of a potato through runoff. The ice melts from the glaciers and runs off into a reservoir like a ocean (for example) and move into a lake (for example) and may evaporates into the atmosphere and the condenses into liquid clouds and precipitation as liquid water on ground surface running off and infiltrate the liquid water in the ground soil. This ground soil helps to produce potato, so the water molecule goes through different processes + reservoirs and ends up in the potato from the glaciers.



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

a. Circulation happens due to convection. The mix of hot and cold air causes thermohaline circulation in ocean. The equator give off hot air and north + south poles give off cold air. During convection these air mix moving water around to different areas of the globe.



18

b. Thermal Energy is causing movement or transformation of water. It is the difference in temps that is causing the effects of the thermohaline circulation.

1. If polar ice contained more salt than the surrounding seawater from which it freezes, the ice would be more dense than the water, creating higher temperature and more evaporation of water into the atmosphere.

EXTRA CREDIT (2 points)

- 2 EC. How are burning wood and respiration similar?
- They both destroy matter during energy conversion
 - They both convert thermal energy into gravitational energy
 - They both convert chemical energy into thermal energy
 - They both convert kinetic energy into potential energy.

40 45
YOUR SCORE:
85

~~XXXXXXXXXX~~
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: A41860512; GROUP #: 19

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?

- a. Water molecules become larger
- ☒ b. Gaseous water becomes liquid water
- c. Hydrogen and oxygen atoms combine to form liquid water
- d. The temperature of water molecules decreases

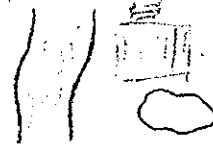
9

2. Which of the following is the largest freshwater reservoir

- ☒ a. The atmosphere
- b. Oceans
- c. Glaciers
- d. Lakes and streams

3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?

- a. Rainfall and surface runoff into the lake
- b. Seasonal high water from the Mississippi River
- ☒ c. Ground water from beneath the surface



4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.

- a. A= evaporation, B= deposition, C= sublimation
- ☒ b. A = condensation, B= precipitation, C= evaporation
- c. A= sublimation, B= precipitation, C= evaporation
- d. A = precipitation, B= freezing, C= condensation

5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?

- a. Liquid water from the pot condenses
- b. Liquid water from the pot evaporates
- ☒ c. Water vapor from the pot condenses
- d. Water vapor from the pot evaporates

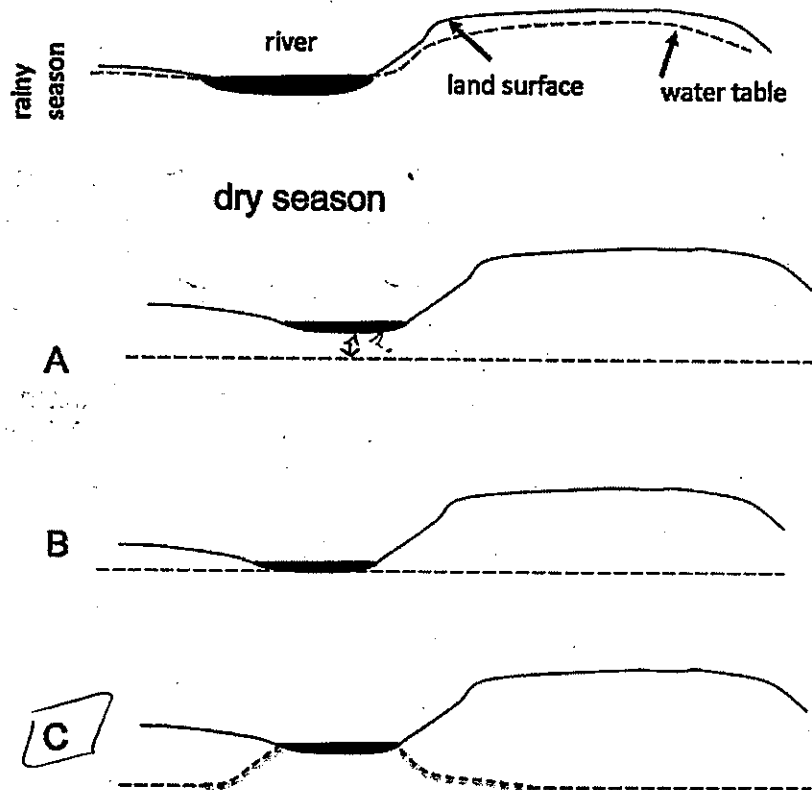
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?

- ☒ a. This is what one would predict with global warming *wider temps → more evaporation/precipitation*
- b. This is the opposite of what one would predict with global warming
- c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of A energy. Water in the atmosphere becomes water in clouds as a result of B energy. Water in clouds becomes water in the atmosphere as the result of C energy.

- a. A = chemical, B = thermal, C = thermal
b. A = gravitational, B = gravitational, C = thermal
c. A = gravitational, B = thermal, C = thermal
d. A = thermal, B = thermal, C = thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:

- a. been greater
b. been less
c. remained the same

10. What happens when plants respire?

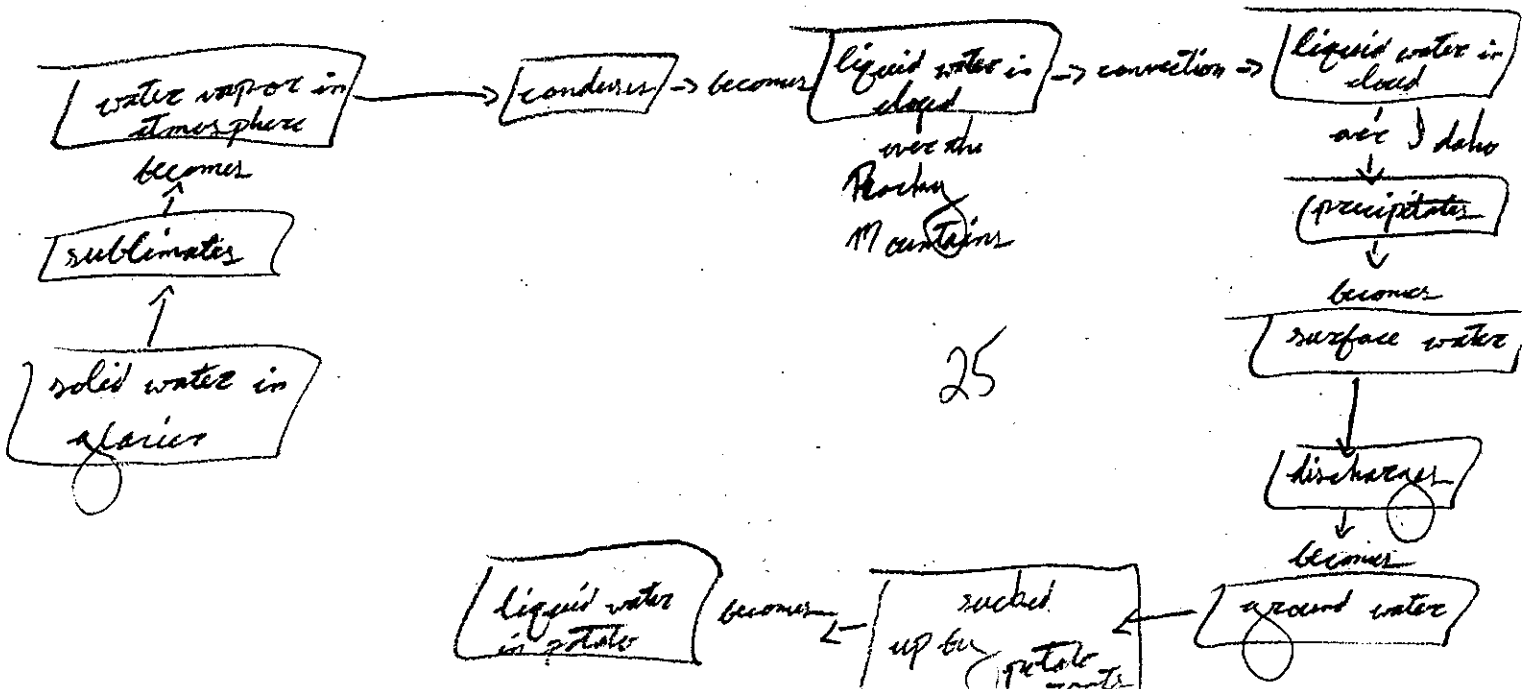
- ~~a. Plants convert biomass into energy~~
~~b. Plants convert energy into biomass~~
c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water

In a glacier in the Rocky Mountains, there is a glacier. A water molecule on the surface of the glacier sublimates and becomes part of water vapor in the atmosphere. Eventually, the water vapor condenses to form a cloud. Pushed by air in convection, the cloud drifts until it comes to Idaho. The cloud has accumulated so many water droplets by now that the gravitational pull causes many of them to fall down as precipitation. After landing on the surface of the soil, the water molecule is in surface water, which is slowly pulled down by gravity to discharge into the ground and groundwater. The groundwater is right by some potato roots, which suck up the water molecule and transport it along the xylem until it enters a potato.

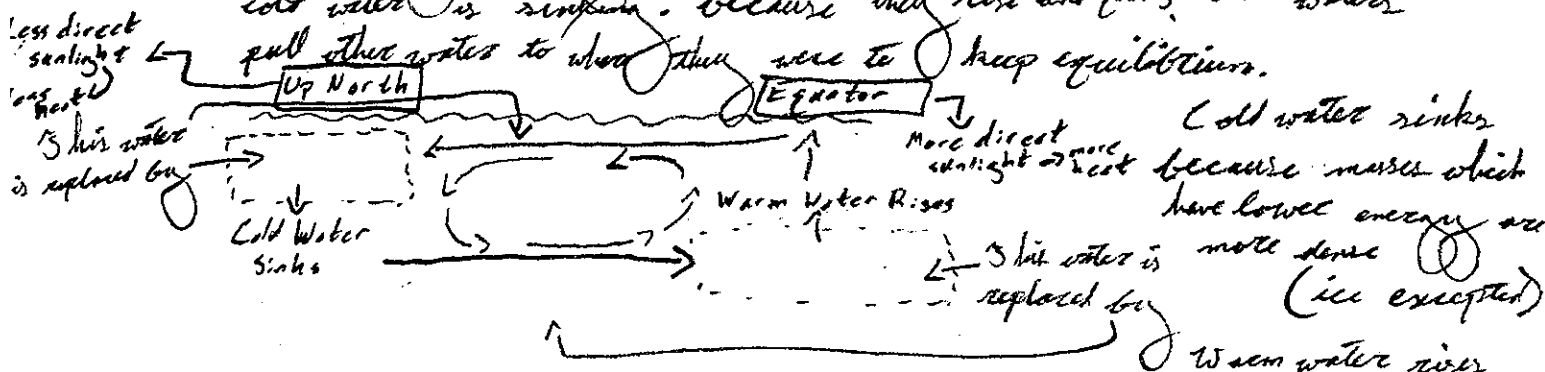


2. When ice forms from seawater, the ice contains less salt than the remaining water.

Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

Circulation occurs due to convection currents. Convection currents are the movement of substance due to relative temperature — in the ocean, warm water rises ^{not so much} and cold water sinks. Water heated by sunlight at the equator rises and flows to areas where cold water is sinking. Because they rise and fall, both waters pull other waters to where they were to keep equilibrium.



Even if polar ice drew more salt from ocean water, making that cold water slightly less dense, that would not change the process of convection in which cold water sinks and so thermohaline circulation would not be heavily affected by this process.

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

45 42

YOUR SCORE:

87

STUDENT ID #: A4918010; GROUP #: 20

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 6
 - a. Water molecules become larger
 - b. Gaseous water becomes liquid water
 - ☒ c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
 - a. A= evaporation, B= deposition, C= sublimation
 - ☒ b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - a. Liquid water from the pot condenses
 - ☒ b. Liquid water from the pot evaporates
 - c. Water vapor from the pot condenses
 - d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - ☒ a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

A 41918010

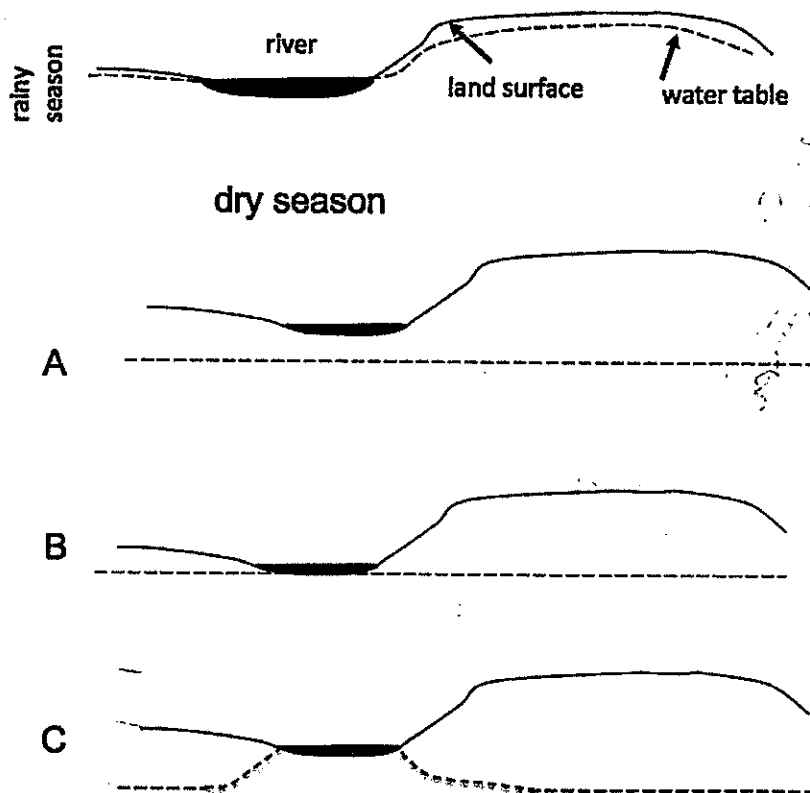
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- ☒ b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- ☒ d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

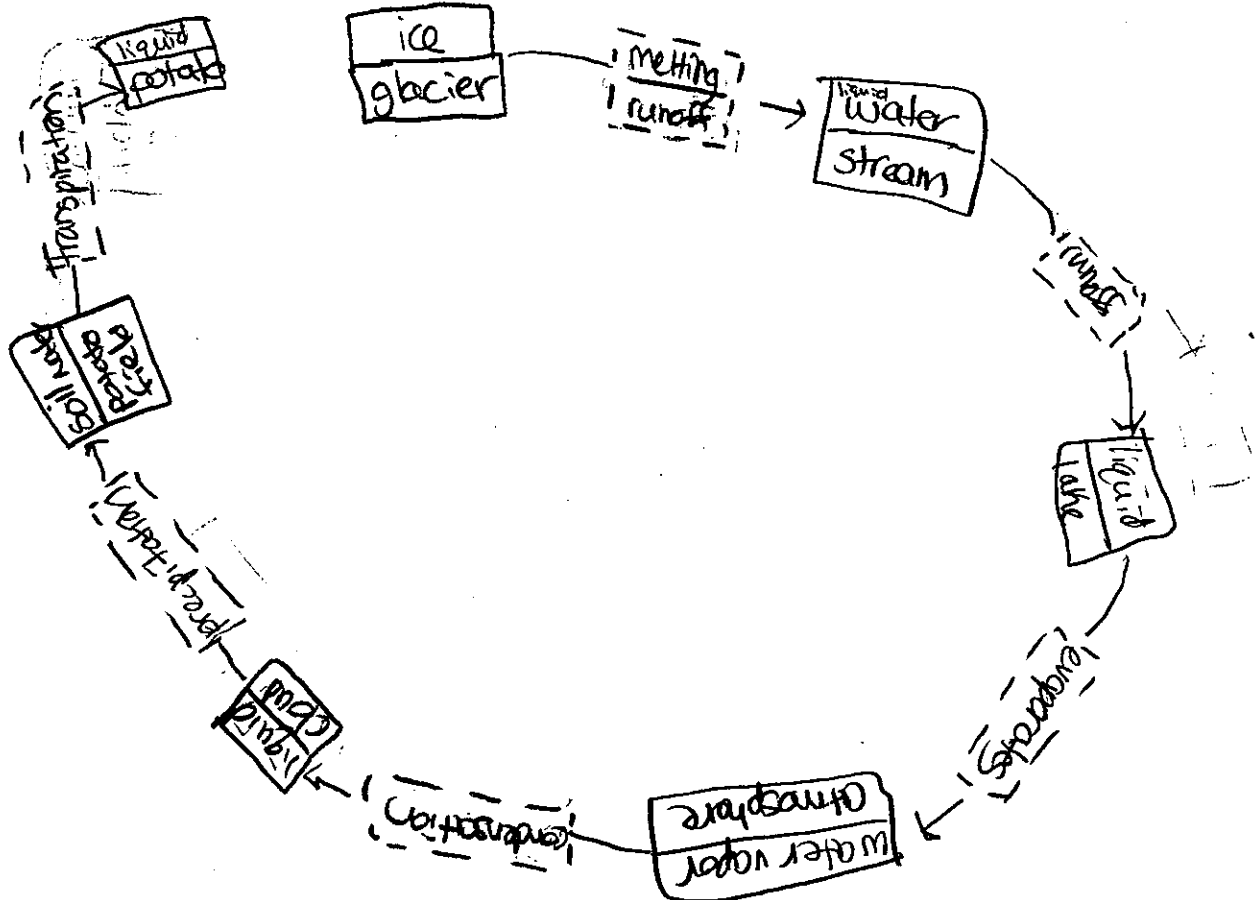


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- ☒ a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

411918010

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



25

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.

Thermohaline circulation is the process that occurs as a result of the different densities of water. The more salty the water is, the denser it is. The denser, saltier water moves out to the polar regions and is then pushed back to the equator because the different densities are trying to return to equilibrium. If polar ice had more salt locked up in it, it would slow down the process of thermohaline circulation. This circulation is driven by gravitational energy. If ice was saltier, it would be denser and held by gravity at the poles longer.

15

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- ☒ They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

30 42

YOUR SCORE:

72

STUDENT ID #: A43332855; GROUP #: 20

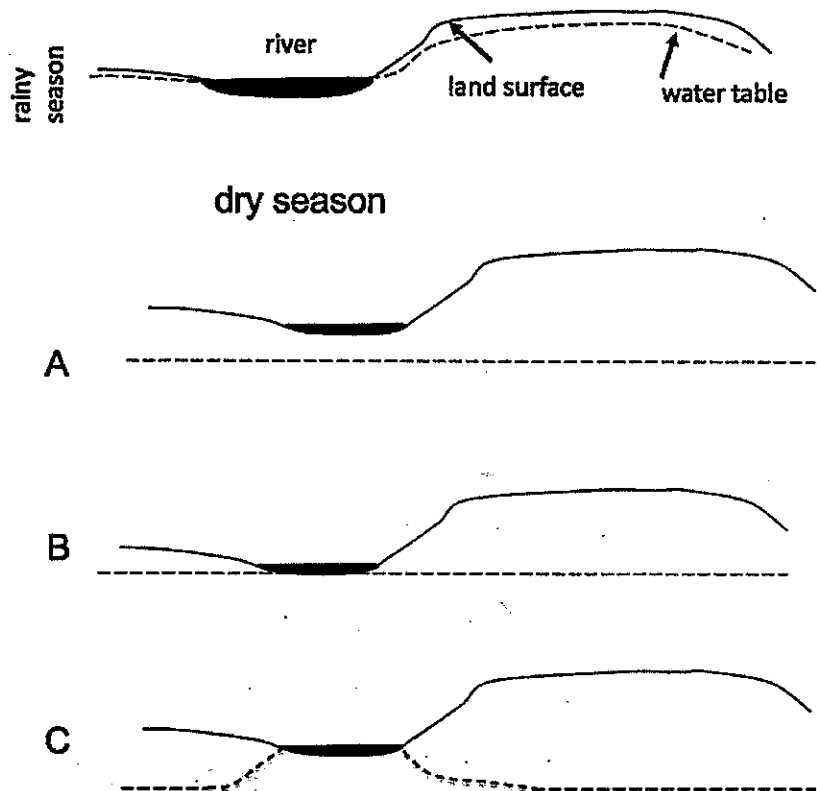
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

- 8
1. What happens when water molecules condense?
 - a. Water molecules become larger
 - b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
 2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - c. Glaciers
 - d. Lakes and streams
 3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - c. Ground water from beneath the surface
 4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
 - a. A= evaporation, B= deposition, C= sublimation
 - b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - d. A = precipitation, B= freezing, C= condensation
 5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - a. Liquid water from the pot condenses
 - b. Liquid water from the pot evaporates
 - c. Water vapor from the pot condenses
 - d. Water vapor from the pot evaporates
 6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

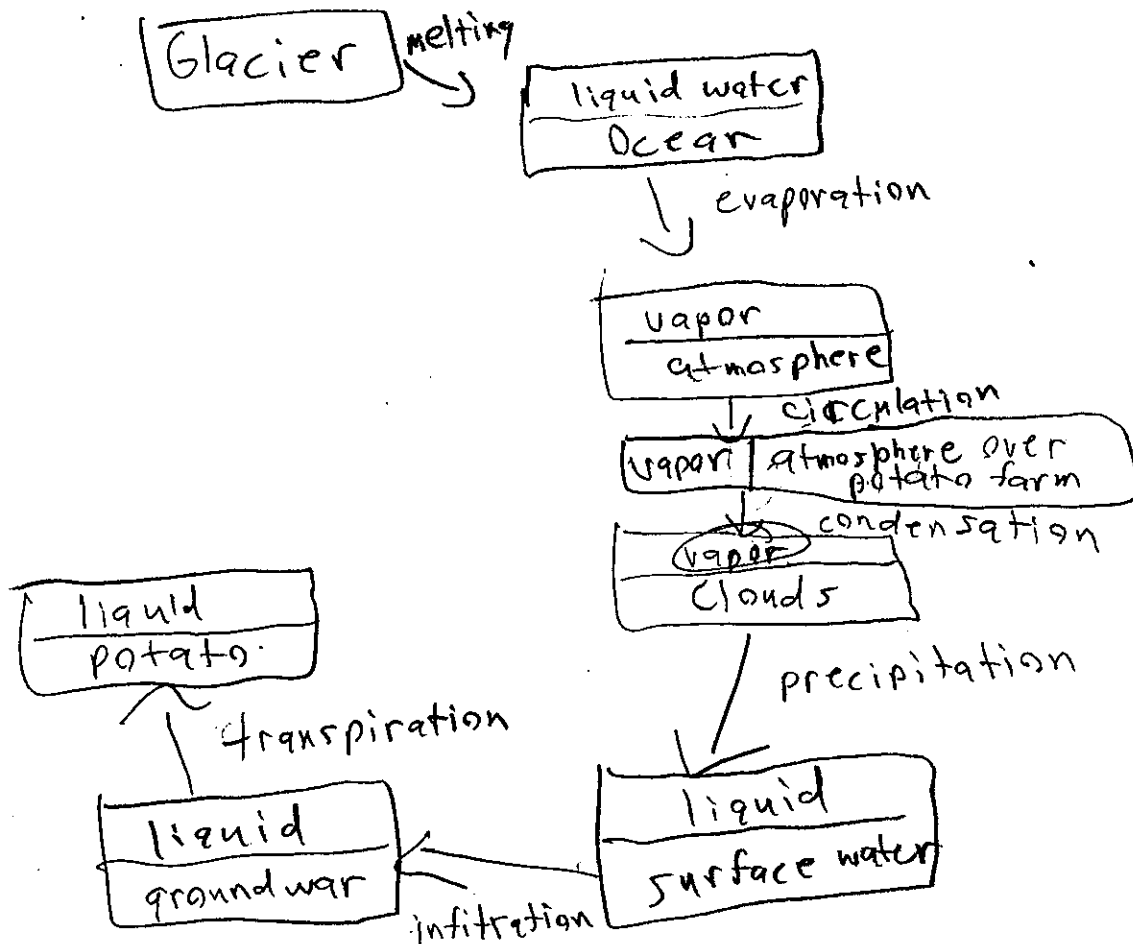


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

A43332855

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



22

2. When ice forms from seawater, the ice contains less salt than the remaining water.

Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

Circulation happens because molecules are constantly moving due to pressure or temperature. Thermohaline circulation would not change because that circulation is based on conversions of thermal energy in temperature. However the polar ice with more salt would be more dense than the surrounding seawater causing it to sink and seawater levels to rise. The energy that is causing the movement of water is gravitational energy.

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- ☒ They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

40 29

YOUR SCORE:

69

STUDENT ID #: A42213991; GROUP #: 20

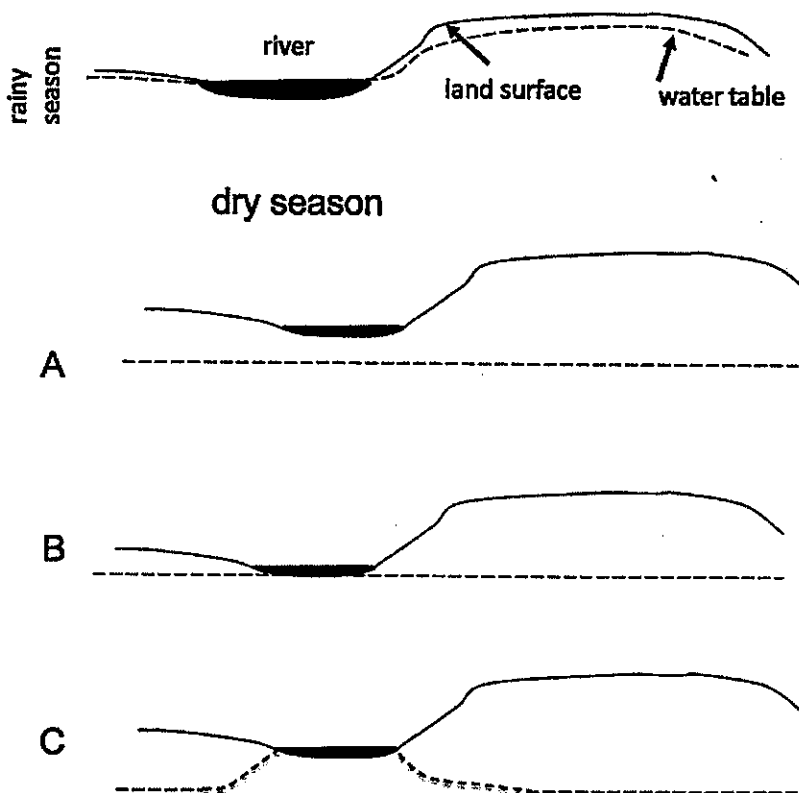
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 7
 - a. Water molecules become larger
 - b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____A____, then becomes water in a glacier through the process of ____B____, and then becomes water in clouds through the process of ____C____.
 - a. A= evaporation, B= deposition, C= sublimation
 - b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - a. Liquid water from the pot condenses
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6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
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10. What happens when plants respire?
- a. Plants convert biomass into energy
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c. Plants release energy

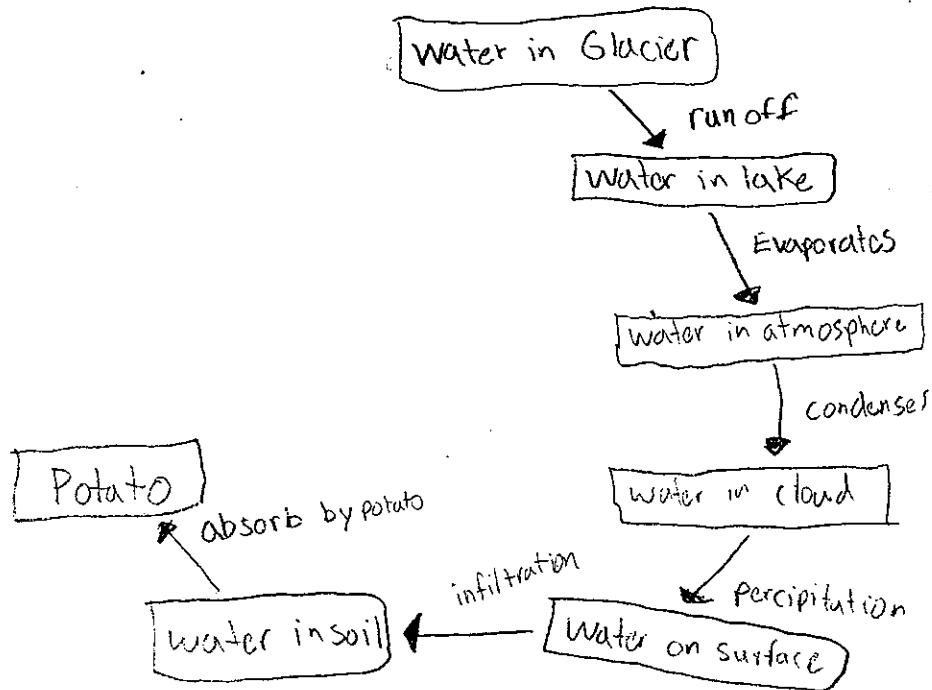
A422/3991

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

3

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
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20

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

The circulation occurs due to the different densities in the water. The ice contains less salt and is less dense than the surrounding seawater, if the ice in the polar regions had more salt in it than the surrounding seawater it would become more dense causing a change in the circulation of the oceans.

2
0

5

2

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

35 27

YOUR SCORE:

62

STUDENT ID #: K41850835; GROUP #: 20

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

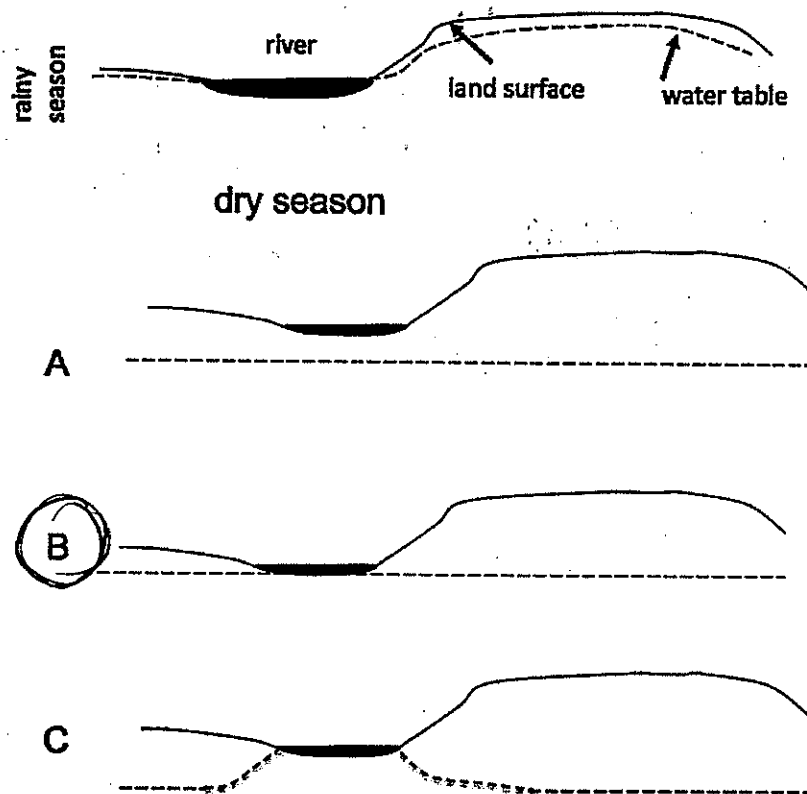
5

1. What happens when water molecules condense?
 - a. Water molecules become larger
 - ☒ b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - ☒ c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
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 - b. Seasonal high water from the Mississippi River
 - c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A , then becomes water in a glacier through the process of B , and then becomes water in clouds through the process of C .
 - a. A= evaporation, B= deposition, C= sublimation
 - ☒ b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
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- a. A = chemical, B = thermal, C = thermal
b. A = gravitational, B = gravitational, C = thermal
c. A = gravitational, B = thermal, C = thermal
d. A = thermal, B = thermal, C = thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

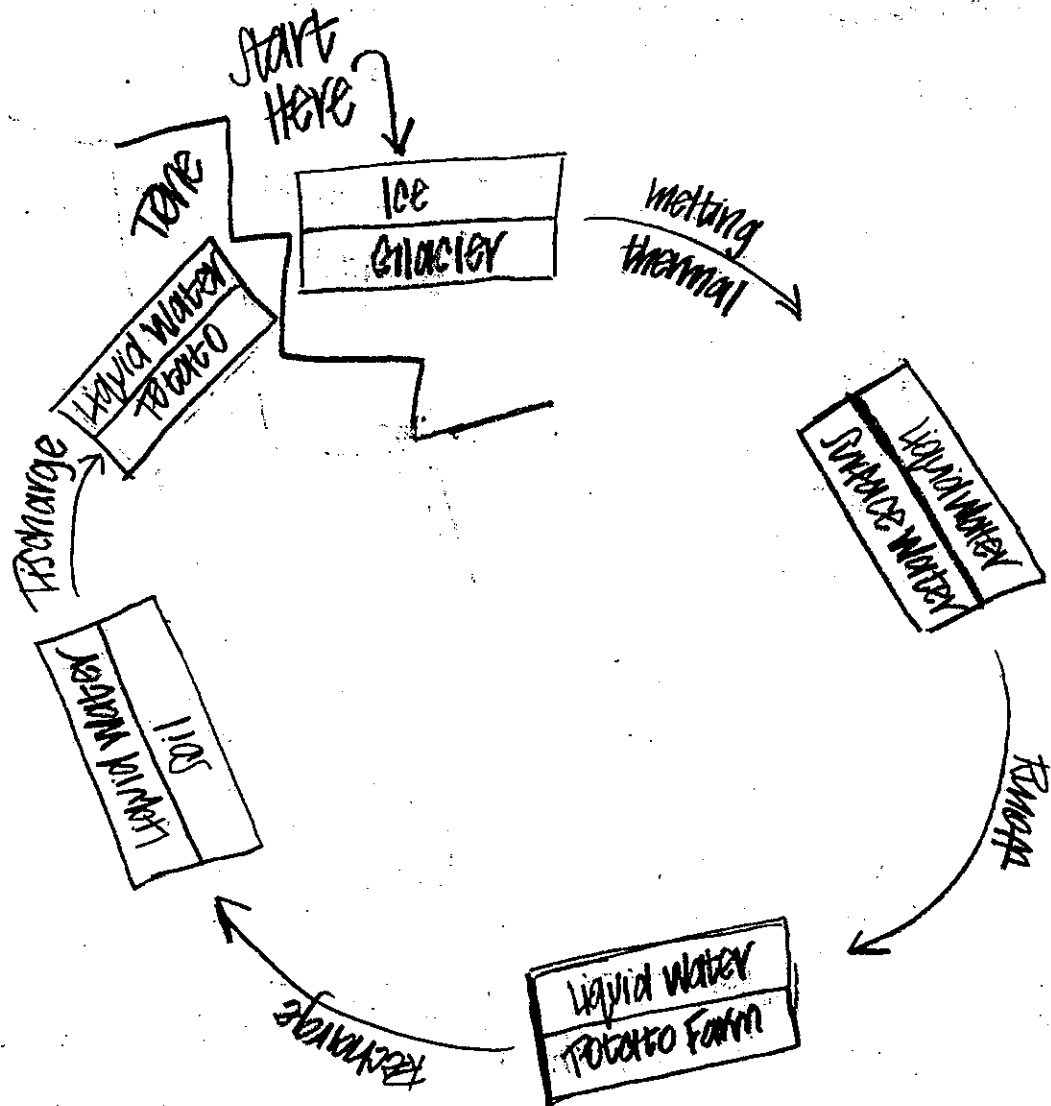


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
b. been less
c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

A41850835

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



OK 25

- er. Sorry if this
confusion... hope
fully the numbers
help



STUDENT ID #: A42052431; GROUP #: 21

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 8
- Water molecules become larger
 - ☒ Gaseous water becomes liquid water
 - Hydrogen and oxygen atoms combine to form liquid water
 - The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
- The atmosphere
 - Oceans
 - ☒ Glaciers
 - Lakes and streams
- $\frac{\text{capacity (amt)}}{\text{rate of flux}} = \Delta T$
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
- ☒ Rainfall and surface runoff into the lake
 - Seasonal high water from the Mississippi River
 - Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____A____, then becomes water in a glacier through the process of ____B____, and then becomes water in clouds through the process of ____C____.
- A= evaporation, B= deposition, C= sublimation
 - ☒ A = condensation, B= precipitation, C= evaporation
 - A= sublimation, B= precipitation, C= evaporation
 - A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
- Liquid water from the pot condenses
 - Liquid water from the pot evaporates
 - ☒ Water vapor from the pot condenses
 - Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
- ☒ This is what one would predict with global warming
 - This is the opposite of what one would predict with global warming
 - Predictions about global warming do not address global precipitation.

A42052431

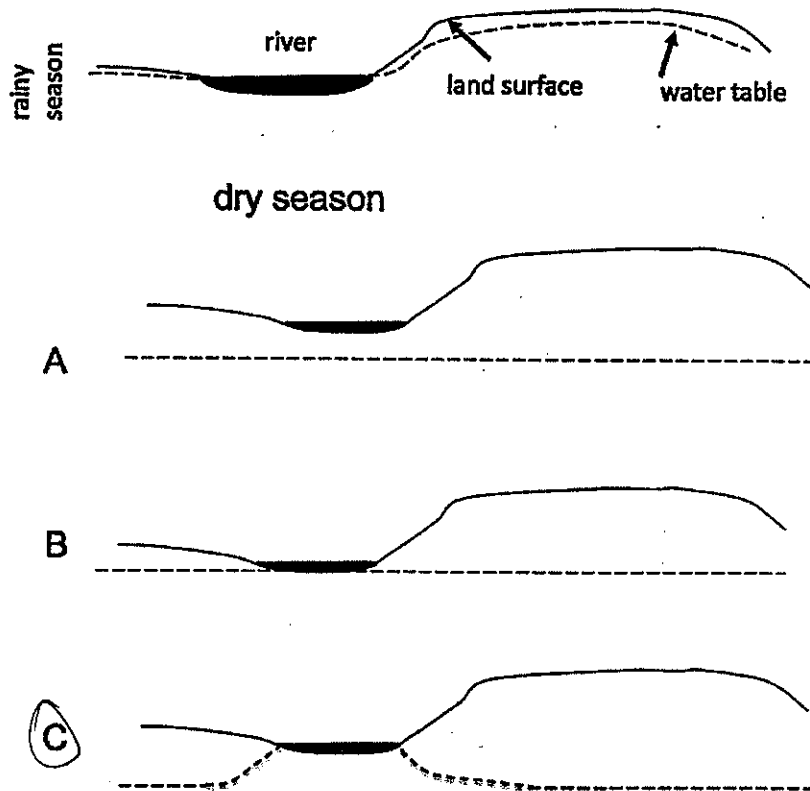
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
b. been less
c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

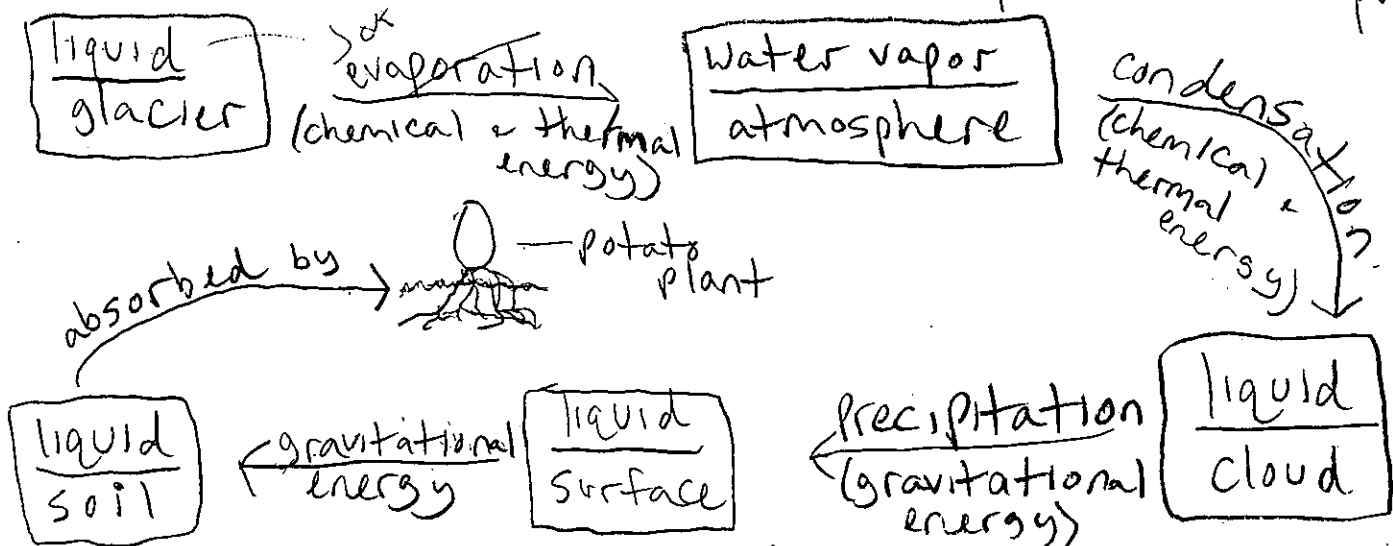
A42052431

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water

A water molecule on a glacier could evaporate into the atmosphere because of thermal and chemical energy. It would then condense to become liquid in a cloud, also because of thermal and chemical energy. Then, the cloud could have liquid precipitation, which would travel to Earth's surface because of gravitational energy. There, the water that has fallen to the soil of a farm ^(via gravitational energy) could be absorbed by a thirsty potato plant. That is how a water molecule on a glacier could eventually become part of a potato.



A42052431

2. When ice forms from seawater, the ice contains less salt than the remaining water.

Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

Salt water is more dense than freshwater. Because of this, the salt water in the ocean sinks to the bottom. Eventually, because of environmental conditions, the surface water becomes salty and sinks to the bottom, which is one factor that keeps salt water in constant circulation. The wind also blows the water and circulates it around various parts of the planet. If polar ice contained more salt than the surrounding seawater, it would sink in the ocean because it would be more dense than the water surrounding it. This might affect thermohaline circulation because perhaps the ice that has now sunk to the bottom of the ocean is not able to melt as easily because it is not floating on the surface of the water, where the water is warmer than the water in the depths of the ocean. If there is more ice at the bottom of the ocean, there would be less thermohaline circulation because there would be less liquid water in the ocean.

2 EXTRA CREDIT (2 points)
 EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

YOUR SCORE:

87

STUDENT ID #: A42271052; GROUP #: 21

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

- 10
1. What happens when water molecules condense?
☐ a. Water molecules become larger
☒ b. Gaseous water becomes liquid water
☐ c. Hydrogen and oxygen atoms combine to form liquid water
☐ d. The temperature of water molecules decreases
 2. Which of the following is the largest freshwater reservoir
☐ a. The atmosphere
☒ b. Oceans
☐ c. Glaciers
☐ d. Lakes and streams
 3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
☐ a. Rainfall and surface runoff into the lake
☐ b. Seasonal high water from the Mississippi River
☒ c. Ground water from beneath the surface
 4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
☐ a. A= evaporation, B= deposition, C= sublimation
☒ b. A = condensation, B= precipitation, C= evaporation
☐ c. A= sublimation, B= precipitation, C= evaporation
☐ d. A = precipitation, B= freezing, C= condensation
 5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
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☐ b. Liquid water from the pot evaporates
☒ c. Water vapor from the pot condenses
☐ d. Water vapor from the pot evaporates
 6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
☒ a. This is what one would predict with global warming
☐ b. This is the opposite of what one would predict with global warming
☐ c. Predictions about global warming do not address global precipitation.

A42271052

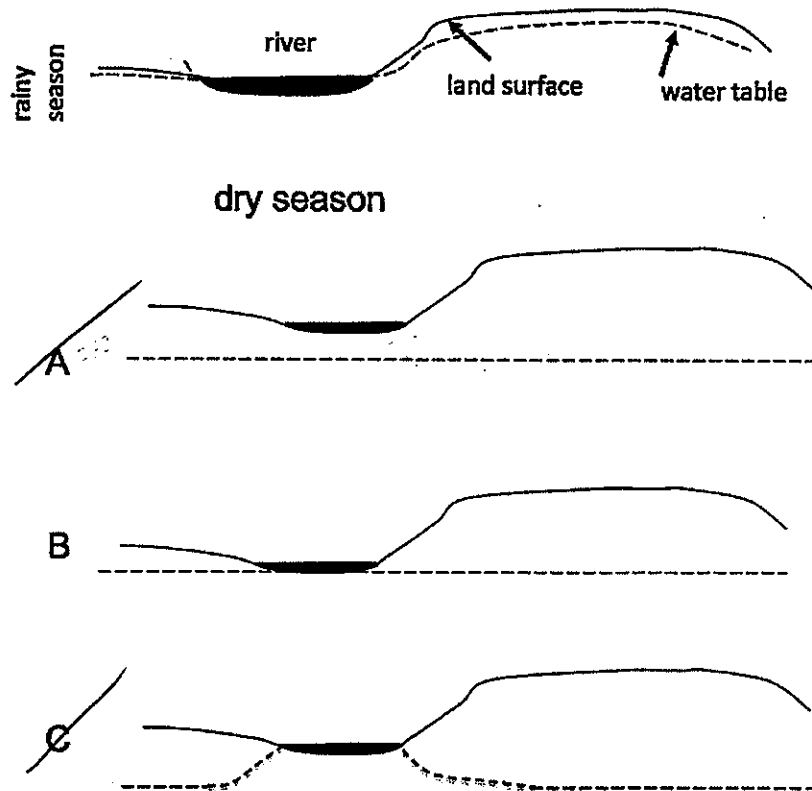
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
b. been less
c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
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c. Plants release energy

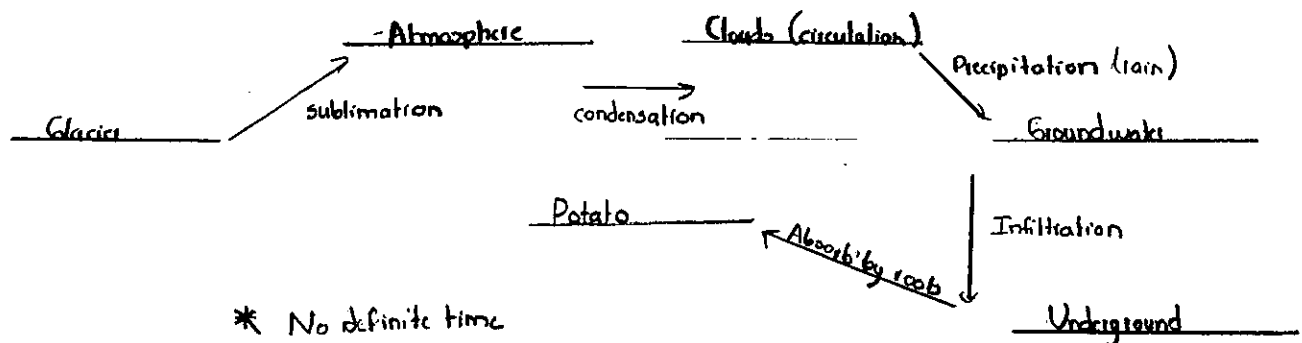
SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water

The length of time and processes in which glacial water becomes part of a potato are most likely lengthy and varied. One interpretation of this journey begins with Arctic glacial ice undergoing the process of sublimation.

The solid glacial ice sublimates directly into the atmosphere as water vapor. A large quantity of that water may directly condense or undergo deposition in the area, but for the sake of this illustration much of the water is circulated in the atmosphere. As the water vapor rises in the atmosphere it condenses to form clouds. The clouds are part of a larger weather system that circulates towards the northwestern United States. Eventually the water stored within the cloud collides to form individual droplets of water that defeat incoming updrafts. The water falls as rain (precipitation), and infiltrates the soil. The water table in the area is fairly high, causing the water to part of the immediate underground reservoir. An undefined time later, the potato crop absorbs moisture through the soil. The originally glacial water is, therefore, used in the production of potatoes.



25

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening — explain why that process happens.
- The energy that is causing movement or transformation of water.

? Thermohaline circulation is the result of the density and temperature of oceanwater. If a larger amount of salt was stored within polar ice, then the effects of thermohaline circulation would be weakened. The surrounding seawater would no longer be as dense because of reduced salinity, and the density gradient of the seawater would not be as large. Salt water is also not as easily frozen as freshwater, meaning that the environment would likely present cooler temperatures to sustain larger quantities of salt in glacial ice.

~~5~~

5

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

50 32

YOUR SCORE:

82

STUDENT ID #: 136628634; GROUP #: 21

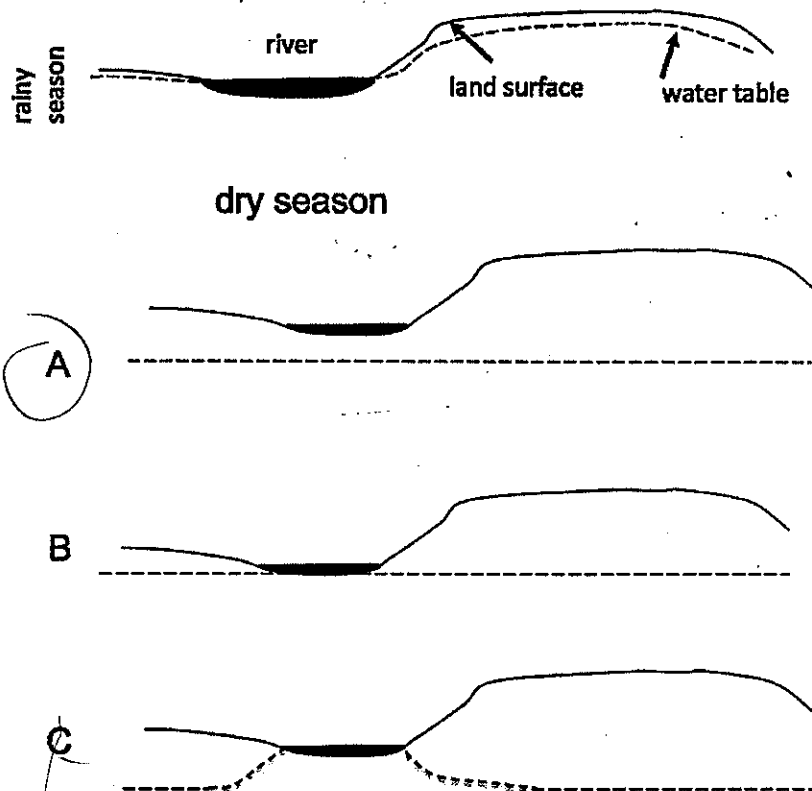
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 6
a. Water molecules become larger
b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
☒ d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
☒ c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
a. Rainfall and surface runoff into the lake
b. Seasonal high water from the Mississippi River
☒ c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
a. A= evaporation, B= deposition, C= sublimation
☒ b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
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5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
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a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
☒ c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

A36628634

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water

Water molecules could naturally move from a glacier to a potato because of ^{an alternative process} evaporation, ~~the~~ water will then ^{be exsorbbed} ~~be~~ released ^{by the clouds which would then it into} different phases? and then it will be ~~rebeared~~ and rain onto potato. or it also could take the thermal and go to the potato through ground water if the glacier is close to land. Since the glacier occurs far it will be a process, since it would have had to get to the potato.

5

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

thermohaline would be able to change in my opinion. You can't compare the polar ice and seawater because there are so different climates the waters are too different. Thermohaline circulation tends to have more fresh water than very polar ice and even though both have salt waters they kind of be different. The circulation happens because of the participation and the climate? Causing different gas and liquid energy to come together which causes the salt not to freeze less when in seawater.

2

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

30 7

YOUR SCORE:

37

STUDENT ID #: A43535121; GROUP #: 21

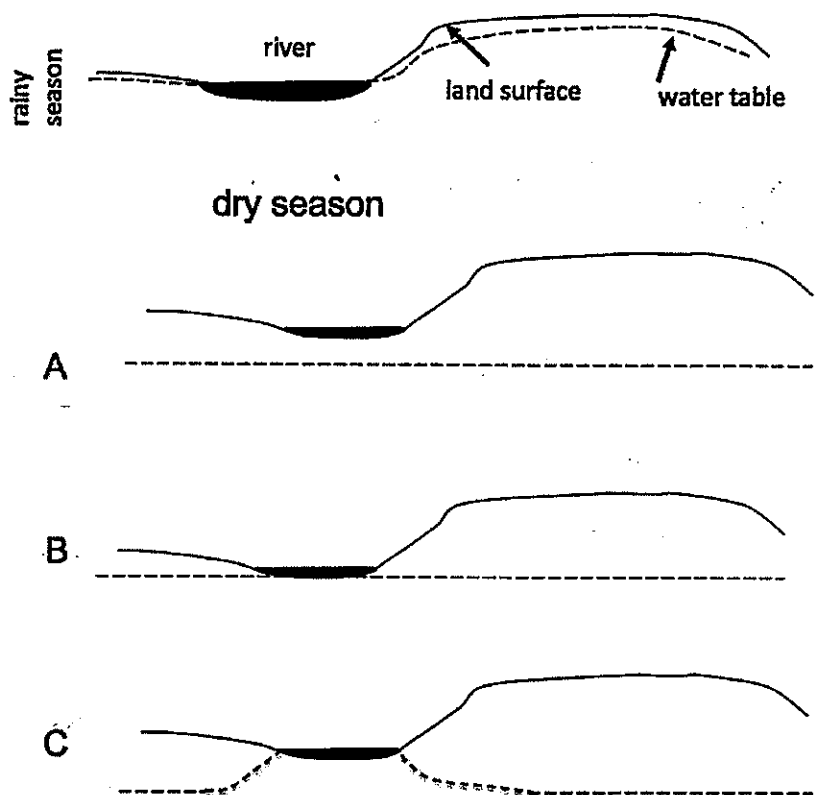
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 7
 - a. Water molecules become larger
 - b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
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4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
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 - b. A = condensation, B= precipitation, C= evaporation
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5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
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7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
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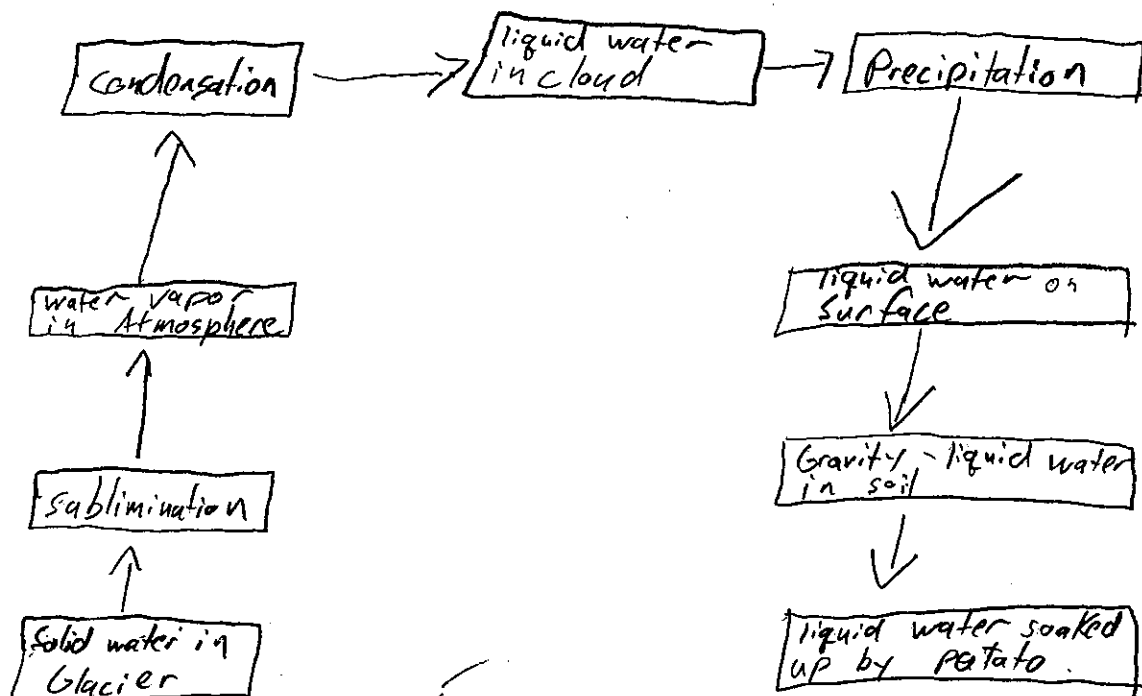
8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
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10. What happens when plants respire?
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SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
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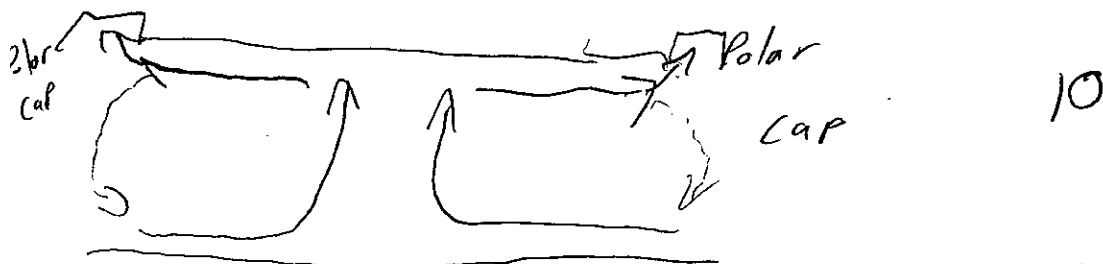
25

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
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Polar Ice with least amount of Salt
Less Dense sea water less salt
Dense sea water containing more salt

Water circulates because of its density which can cause water to rise or sink. It also circulates due to thermal energy.

Multiple things could happen. First if the ice contained more salt than the surrounding water it could become more dense and sink or the salt would cause it to melt easier.



If the polar caps had more salt then it could slow down or stop circulation instead of letting it to continue to circulate.

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

35 37

YOUR SCORE:

72

STUDENT ID #: A4213 4271; GROUP #: 21

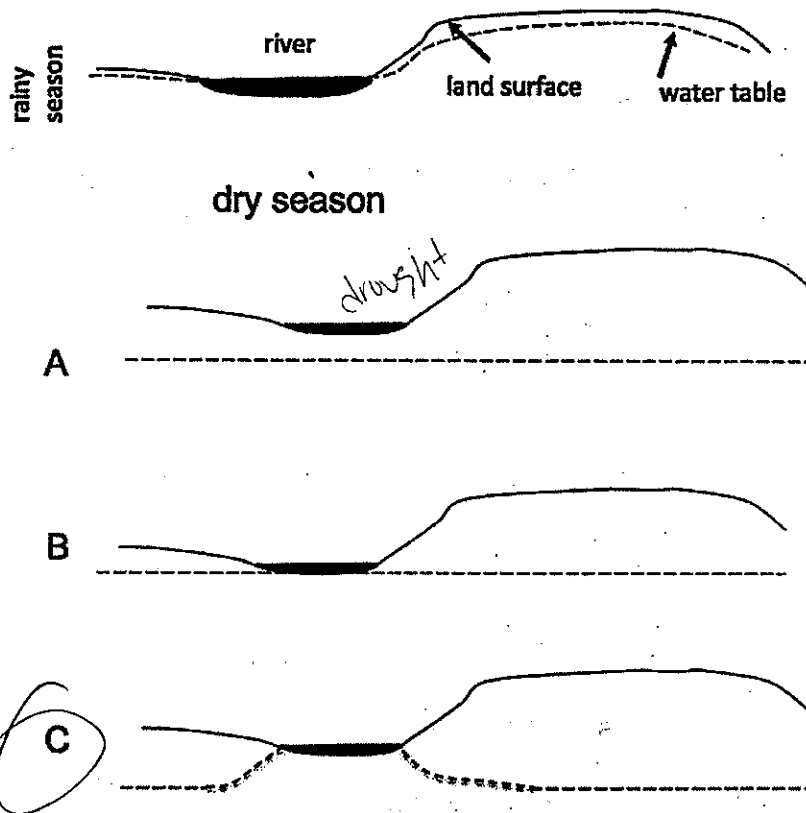
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

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 - d. The temperature of water molecules decreases
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 - b. Oceans
 - c. Glaciers
 - ☒ d. Lakes and streams
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- a. A= chemical, B= thermal, C= thermal
 b. A = gravitational, B= gravitational, C= thermal
 c. A = gravitational, B= thermal, C= thermal
 d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

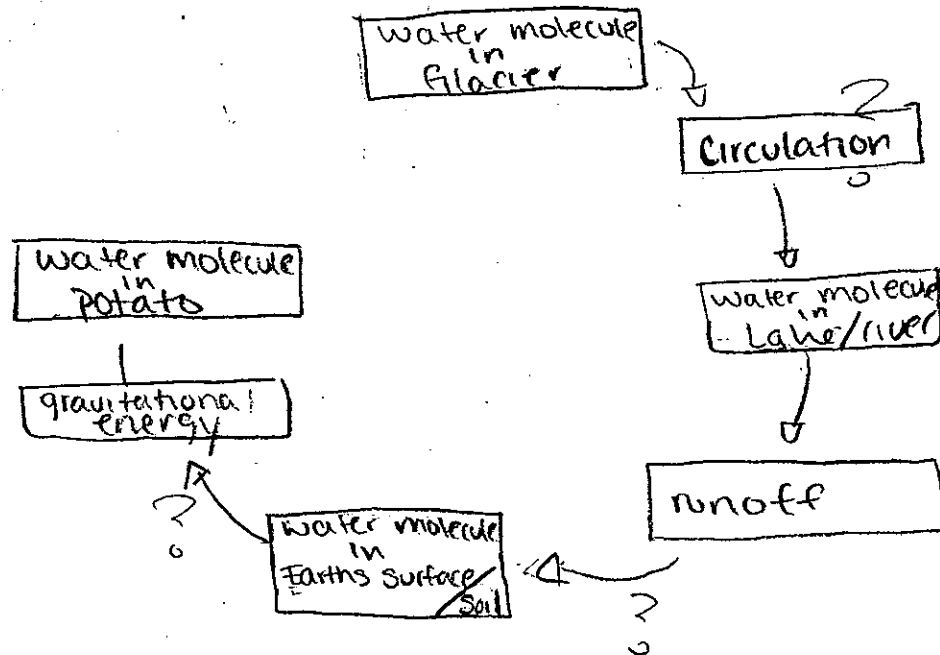


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- a. been greater
 b. been less
 c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 b. Plants convert energy into biomass
 c. Plants release energy

A412134271

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
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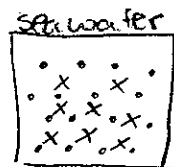
442134271

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.

The Thermohaline circulation occurs because of warm and cold water densities. It moves the warmer water towards the surface and the colder water deeper into the ocean.



not so much in oceans

If polar ice contained more salt than the surrounding seawater then it would make water more dense and cause it to fall deeper into the cold ocean water leaving less warm water.?

This would change the Thermohaline circulation in a way that the warm water would, or lack of, would reach the lower latitudes of the world, causing colder air, and climates.

\$10

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

30 520

YOUR SCORE:

46 50

A37669797

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: A37669797; GROUP #: 22

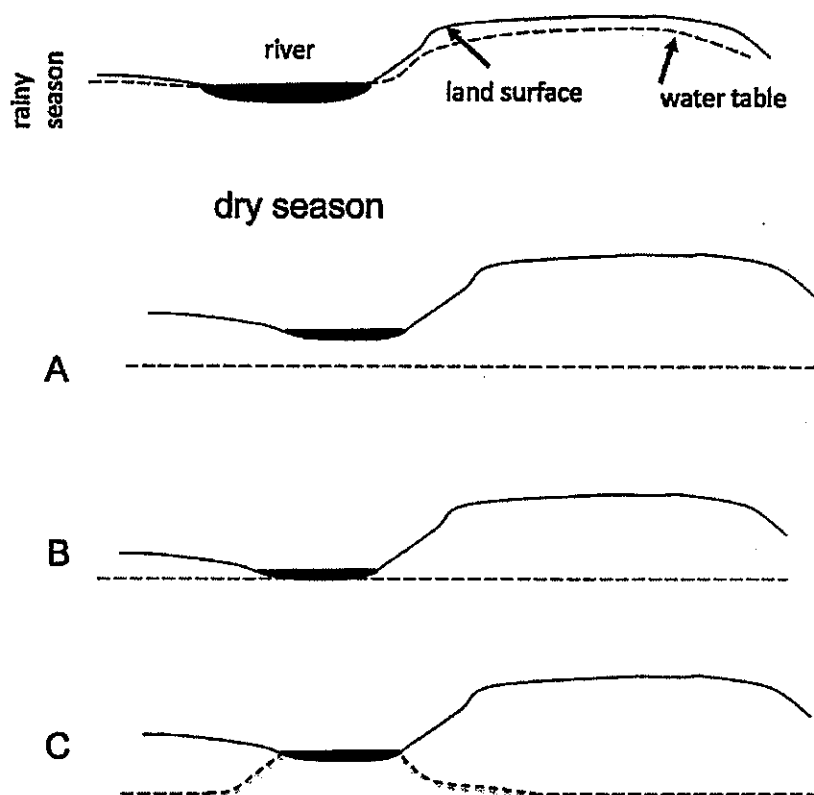
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 9
a. ~~Water molecules become larger~~
b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
a. Rainfall and surface runoff into the lake
b. Seasonal high water from the Mississippi River
c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
a. A= evaporation, B= deposition, C= sublimation
b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
a. Liquid water from the ~~pot~~ pot condenses
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6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

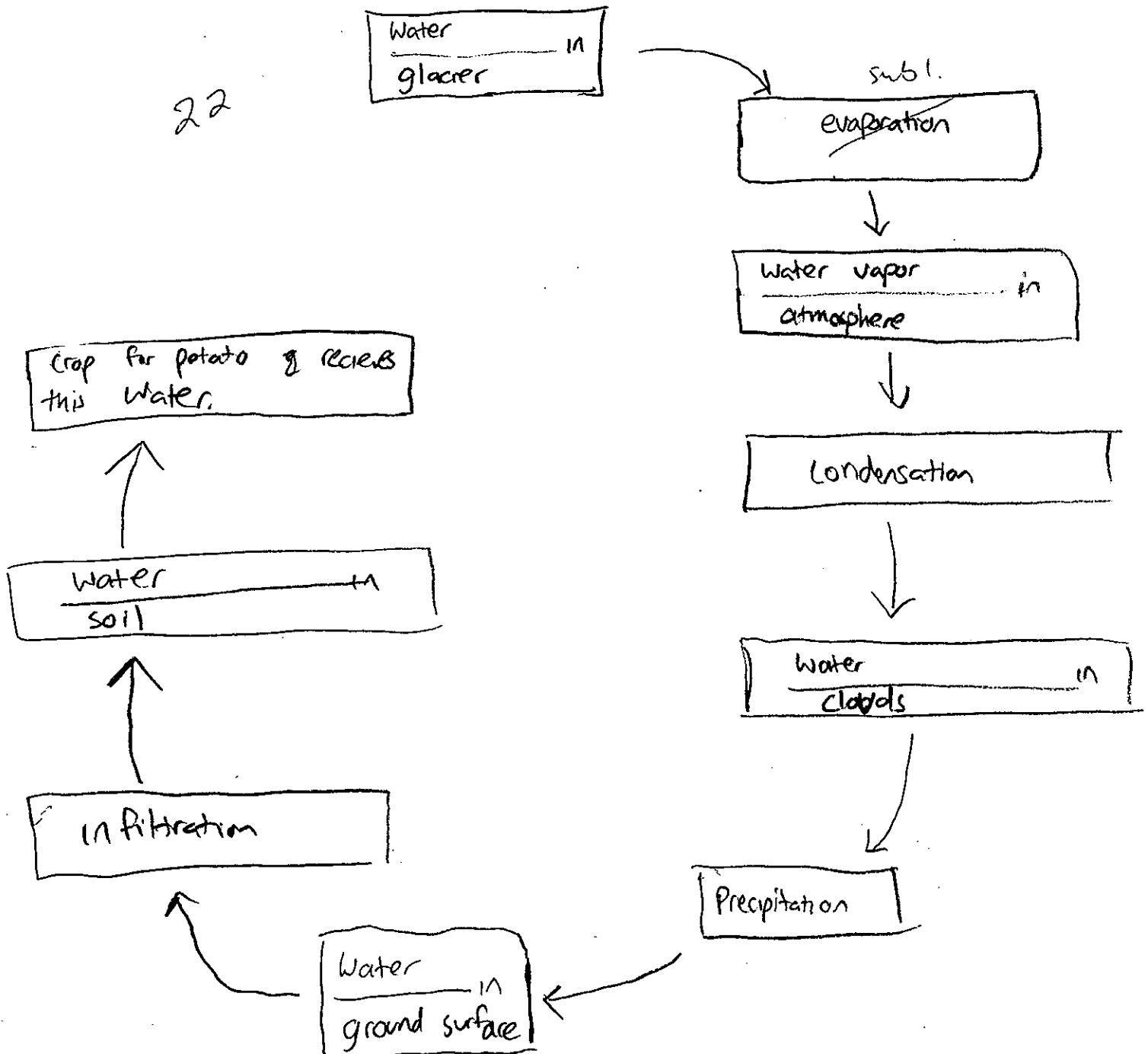
A37669797

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

3

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



A37669797

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - b. The energy that is causing movement or transformation of water.

Thermohaline circulation would decrease because the salt that would originally have been circulating is now in the ice. The circulation occurs from warm ^{not really in oceans} water rising then cooling and sinking back down. The density of the salt would also cause it to sink which contributes to the circulation and with less salt in the water, circulation would decrease.

\$10

2 EXTRA CREDIT (2 points)

- EC. How are burning wood and respiration similar?
- a. They both destroy matter during energy conversion
 - b. They both convert thermal energy into gravitational energy
 - c. They both convert chemical energy into thermal energy
 - d. They both convert kinetic energy into potential energy.

45 37

YOUR SCORE:

82

STUDENT ID #: A41724348; GROUP #: 22

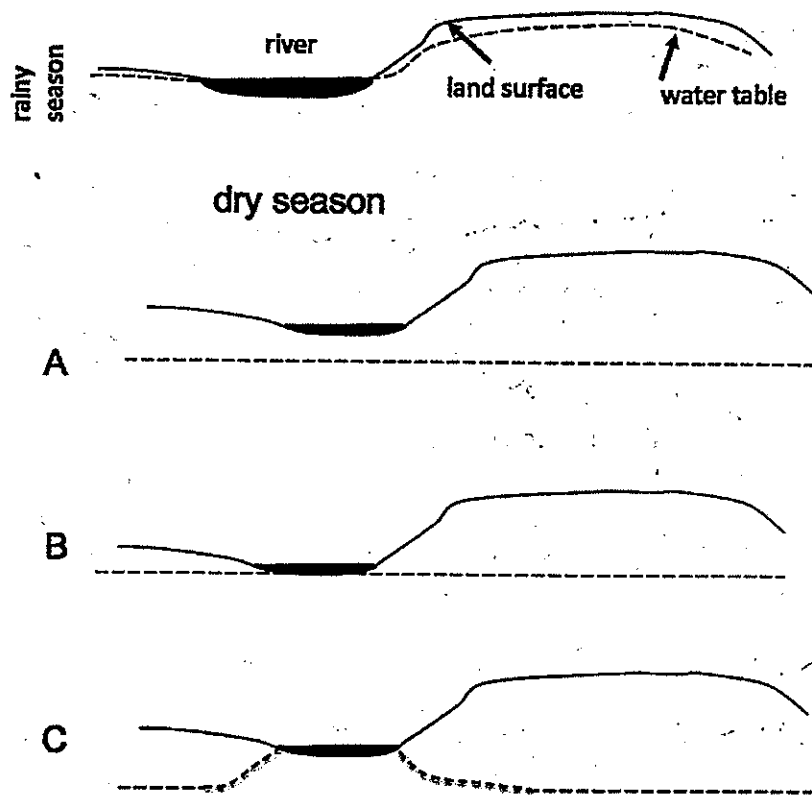
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?
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b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
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2. Which of the following is the largest freshwater reservoir
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7. Fill in the blanks. Water on the ground becomes water in the soil as a result of ____A____ energy. Water in the atmosphere becomes water in clouds as a result of ____B____ energy. Water in clouds becomes water in the atmosphere as the result of ____C____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
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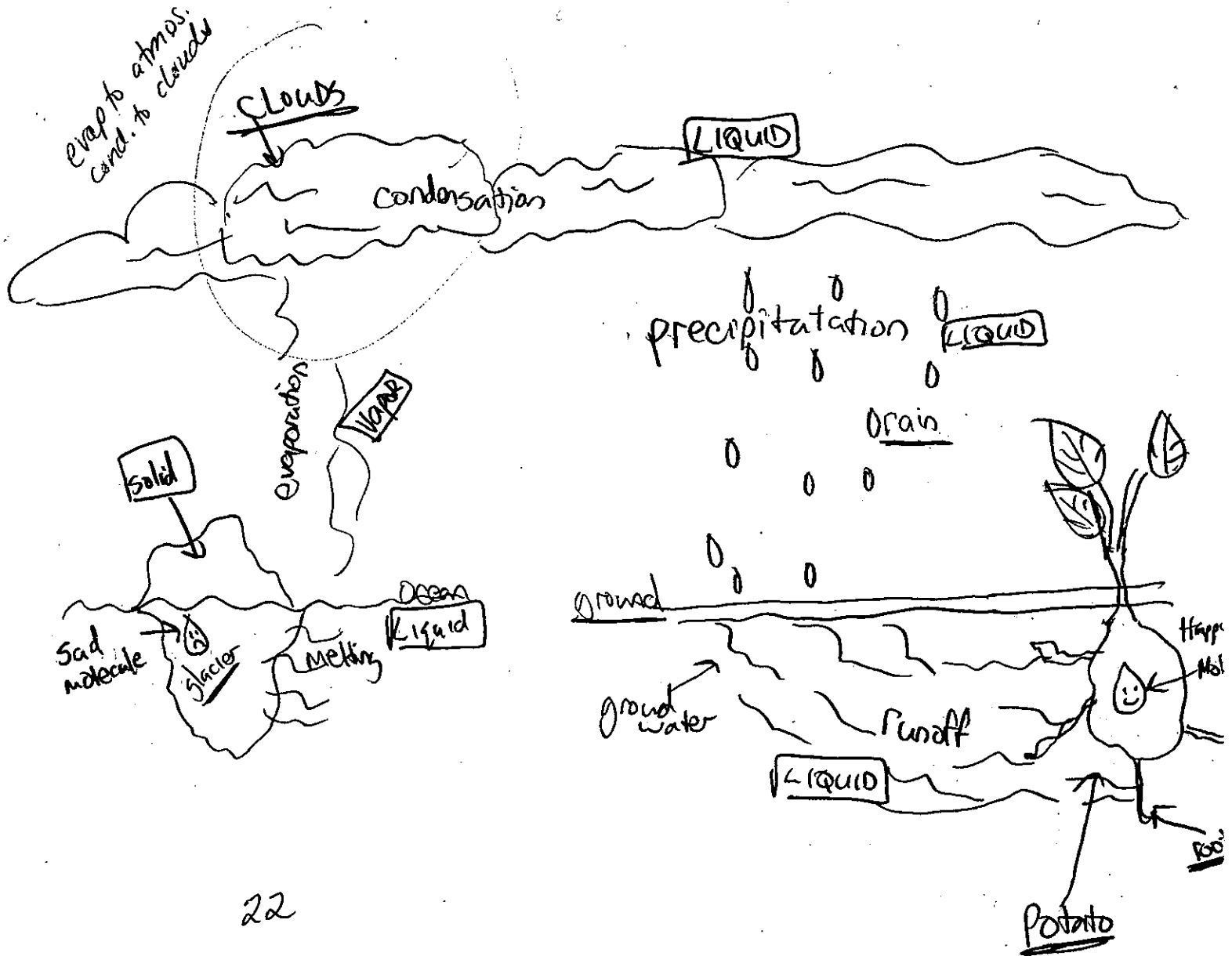
8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- a. Water phase at each step in the journey
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2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - b. The energy that is causing movement or transformation of water.

Thermohaline circulation occurs because when saltwater freezes the salt in the water is more dense than the water free ice itself therefore when it freezes most of the salt remains in the water.

If polar ice contained more salt than the surrounding seawater, the oceans would be very close to being almost freshwater, because the glaciers would take a majority of the salt from the ocean. And if that was to happen, when the water evaporates into the atmosphere it would stay there longer, because it would have less salt in it.

does not evaporate!

2

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- a. They both destroy matter during energy conversion
- b. They both convert thermal energy into gravitational energy
- c. They both convert chemical energy into thermal energy
- d. They both convert kinetic energy into potential energy.

35 26

YOUR SCORE:

61

STUDENT ID #: A42839439; GROUP #: 22

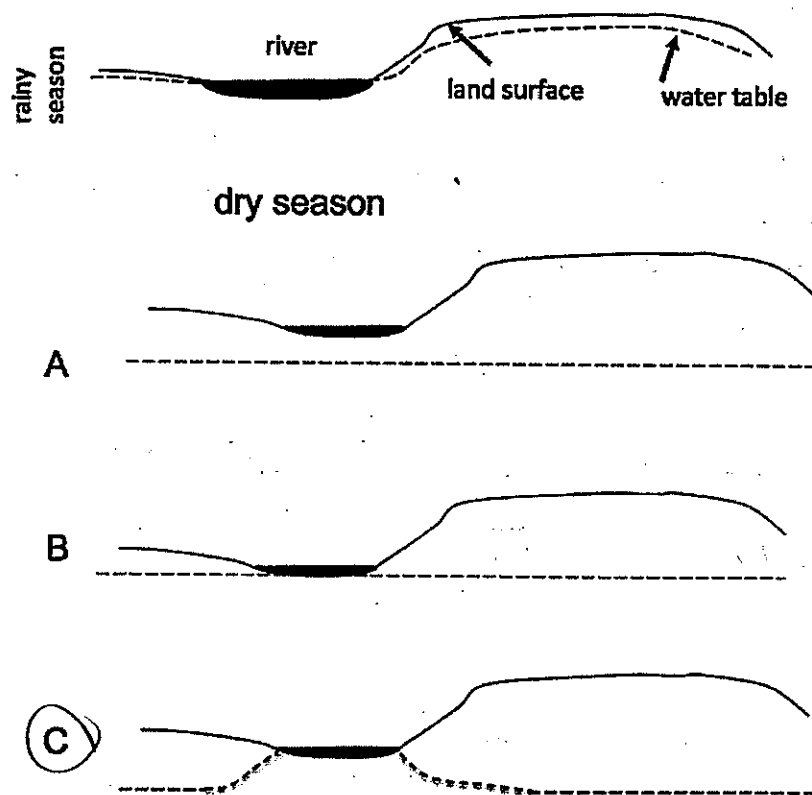
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?
a. Water molecules become larger
☒ b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
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☒ c. Glaciers
d. Lakes and streams
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4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
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7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

a. A= chemical, B= thermal, C= thermal
 b. A = gravitational, B= gravitational, C= thermal
 c. A = gravitational, B= thermal, C= thermal
 d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



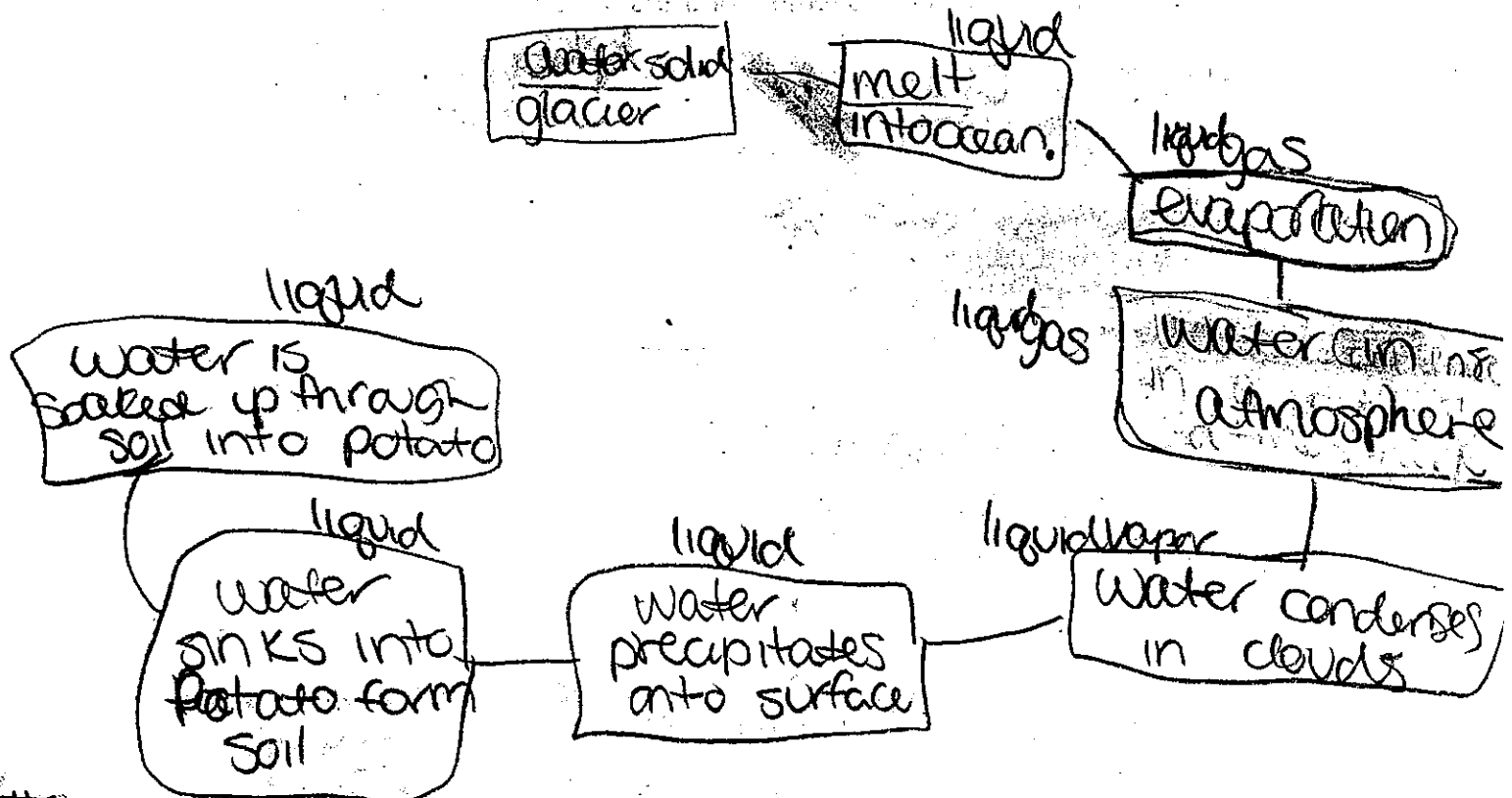
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- a. been greater
 b. been less
 c. remained the same

10. What happens when plants respire?
- a. Plants convert biomass into energy
 b. Plants convert energy into biomass
 c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
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The water first begins at the ocean as a solid in the glacier. Then it melts into the ocean. The water molecules from the ocean then evaporate into the atmosphere. From there, the gas then condenses into the clouds. Precipitation then happens & the water molecules precipitate onto the form & sink into the soil to get to the potato plant.

0/4

25

A42839439

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.

Thermohaline circulation would decrease because the amount of salt that is circulating in the remaining parts of the ocean. It would also depend on the mass ratio of how big the glacier is compared to the body of water. If the polar ice contained more salt than the surrounding water, the salt would not circulate as rapidly. The polar ice would also be more dense because of the amount of salt. Gravitational energy would then become a factor in the equation. The salt water that has less salt because the amount freezing in the glacier will have more freezing in the ocean & less thermohaline circulation.

10

10

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

40 37

YOUR SCORE:

17

~~SECRET~~

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: A42829869; GROUP #: 22

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

- 8
1. What happens when water molecules condense?
☐ a. Water molecules become larger
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 2. Which of the following is the largest freshwater reservoir
☐ a. The atmosphere
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☐ d. Lakes and streams
 3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
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A42829869

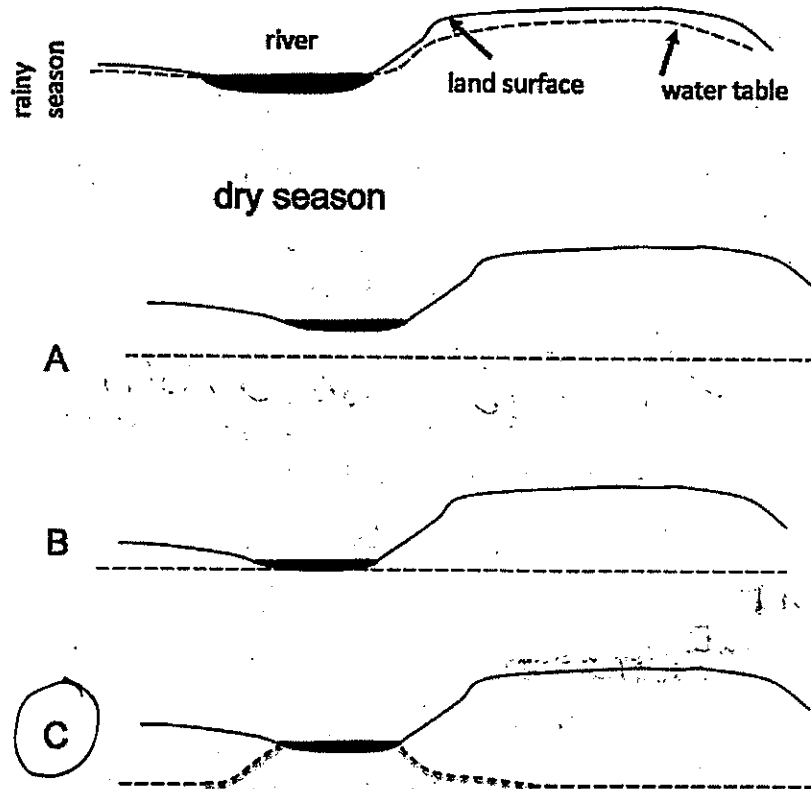
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A = chemical, B = thermal, C = thermal
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8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:

- a. been greater
b. been less
c. remained the same

Handwritten: 1.9

$$\frac{0.9}{1} = 0.9$$

$$\frac{1.9}{1} = 1.9$$

10. What happens when plants respire?

- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

Handwritten: release heat

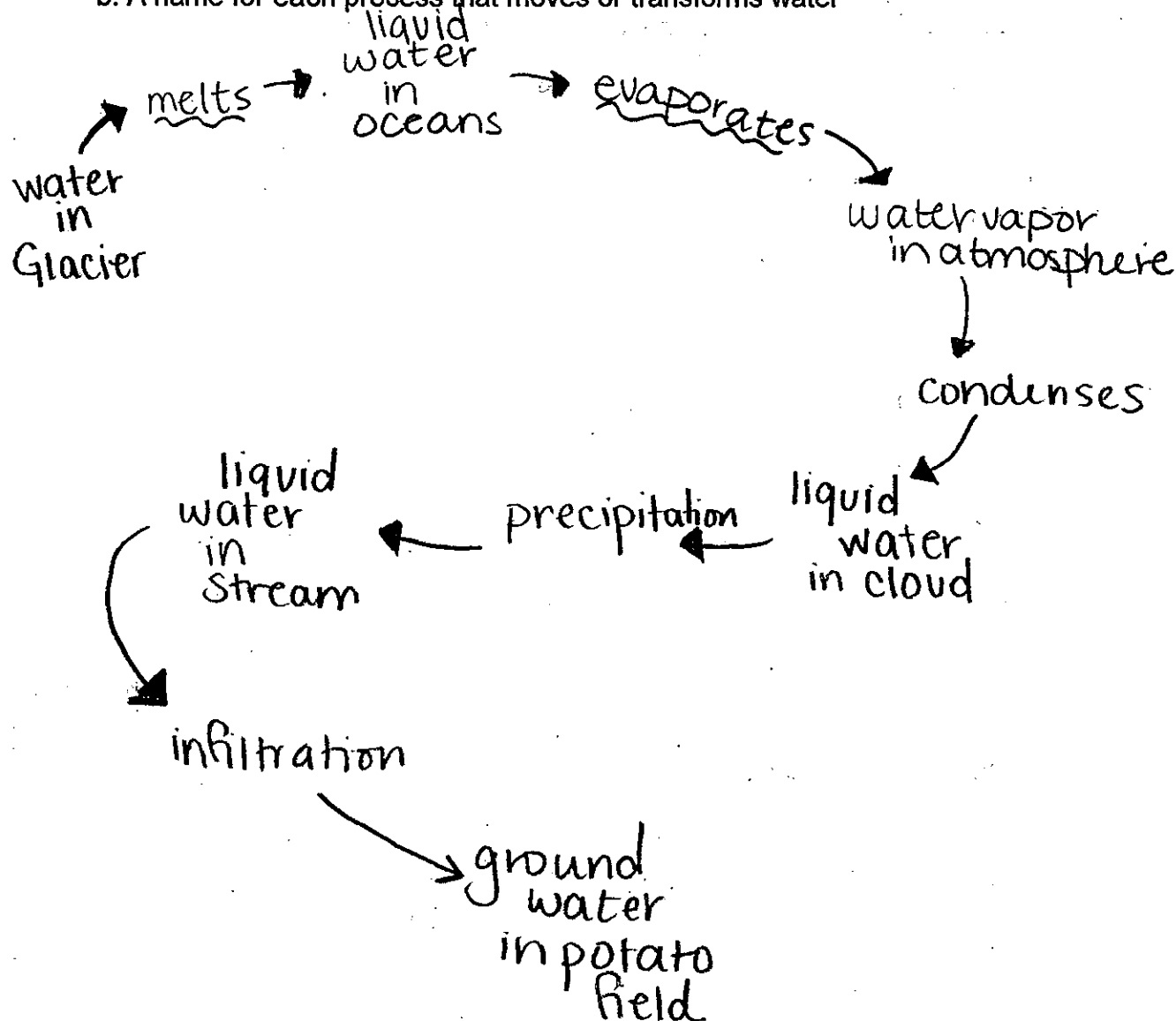
Handwritten: in form of energy



A42829869

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
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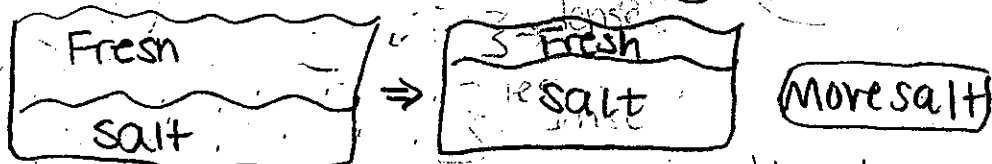


25

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

Circulation happens because of density differences. Less dense, colder, items sink. Warm, denser items rise. For example, water with more amount of haline will sink and freshwater will rise. Same goes for air, warm air rises, cold air sinks. Temperature is an important energy source because when things heat up they become dense and vice versa with cold air and this causes density differences. If more salt were added to the surrounding ice then water would become saltier when it melts, which makes the water more dense & therefore the salt water content at the bottom of the ocean will become greater. Higher density = higher temperatures in oceans. The ocean currents that drive the thermohaline circulation will carry more amounts of warmer air and temperatures at the poles may rise.



EXTRA CREDIT (2 points)

- 7 EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- ☒ They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

40 42

YOUR SCORE:

82

STUDENT ID #: A41823312; GROUP #: 10 23

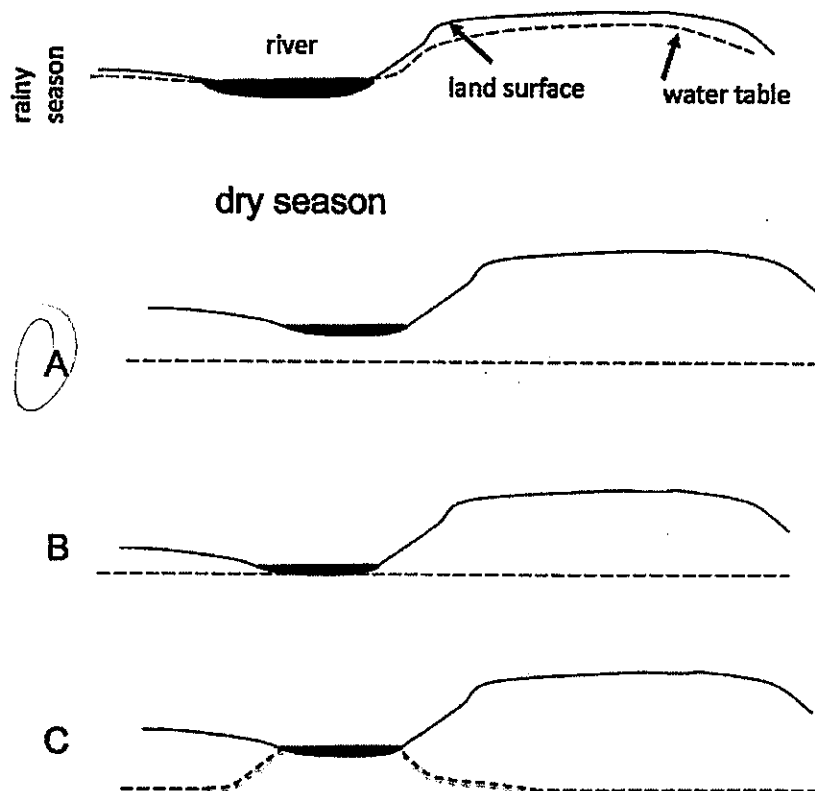
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 6
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 - ☒ b. A = condensation, B= precipitation, C= evaporation
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7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- ☒ c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

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9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
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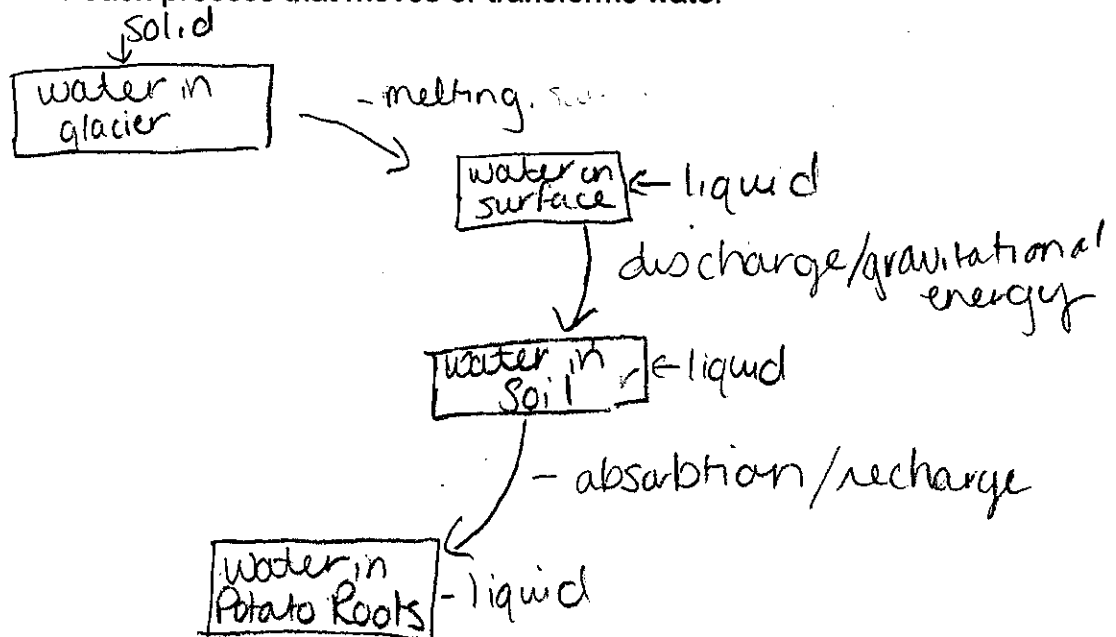
A41823312

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

3

SHORT ANSWER. 25 points each (50 points total)

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OK

25

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- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.

Circulation would change because the ice of the seawater would be more dense than the seawater underneath it, the ice would sink because of its higher density rather than floating on top. Circulation happens because the movement of molecules or temperature causes changes in density which causes shifts of placement of that certain group of matter. Circulation would include ice and ice water into this by the change. Thermal energy would cause this movement.

10



2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

30 37

YOUR SCORE:

67

STUDENT ID #: A43050270; GROUP #: 23

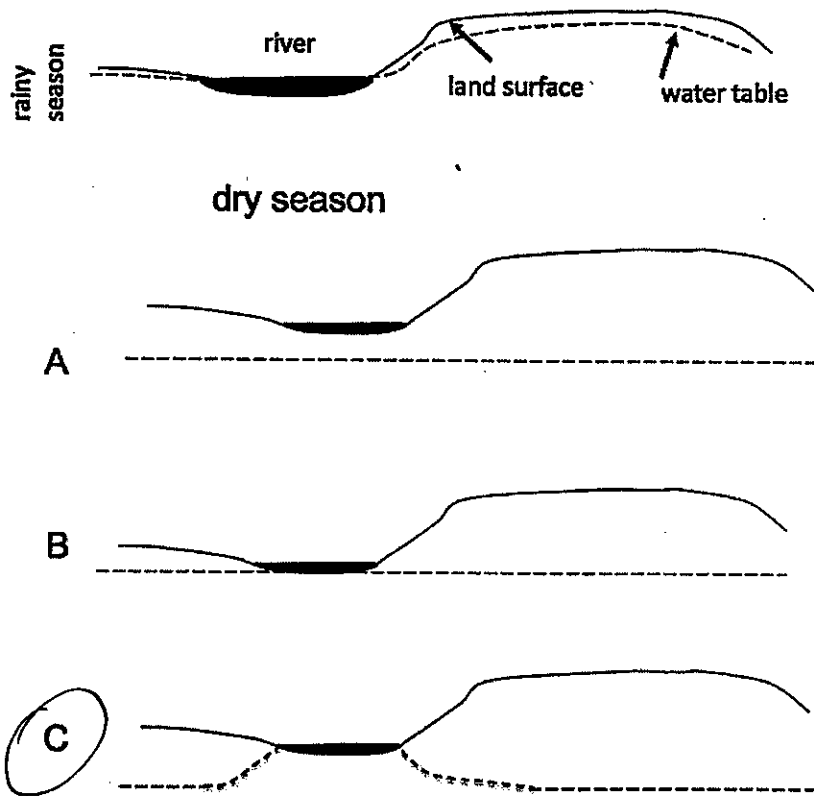
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7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

a. A = chemical, B = thermal, C = thermal
 b. A = gravitational, B = gravitational, C = thermal
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 d. A = thermal, B = thermal, C = thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 b. been less
 c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 b. Plants convert energy into biomass
 c. Plants release energy

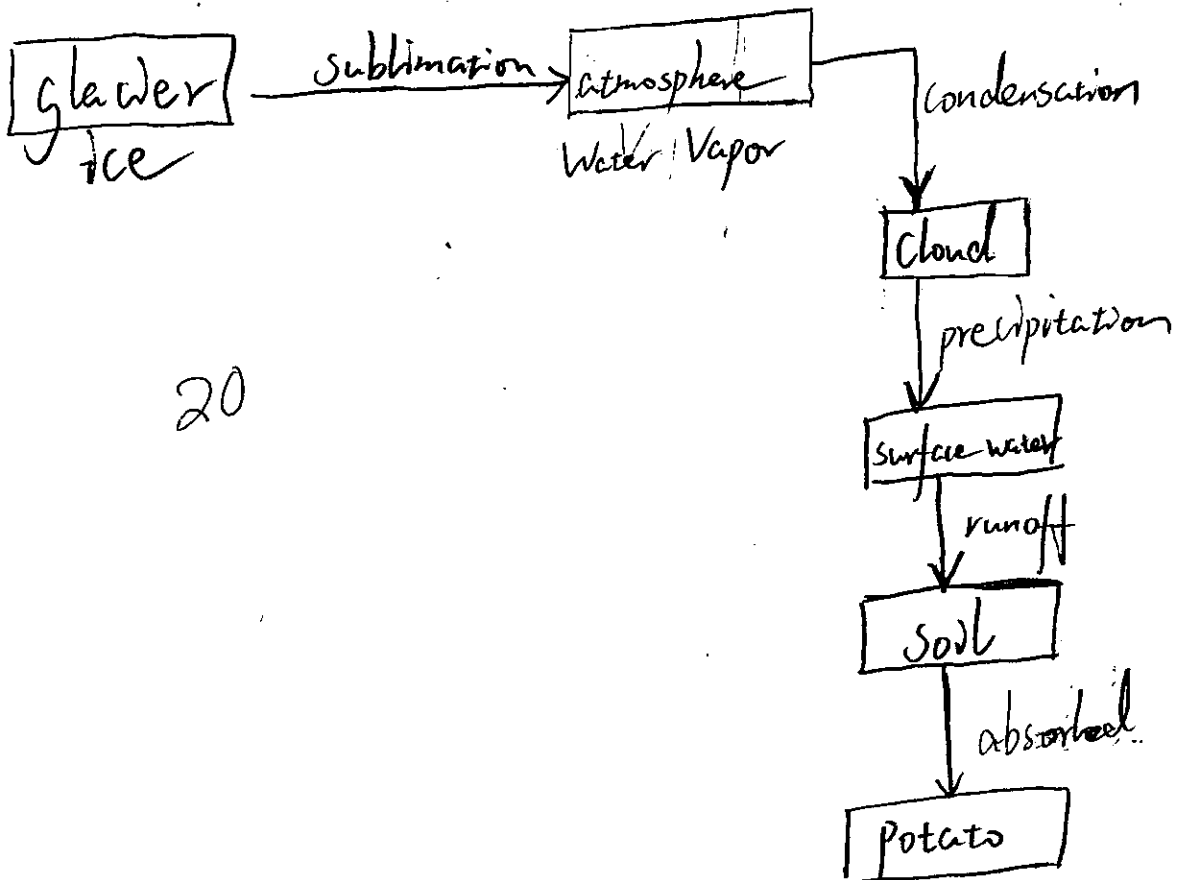
A43050270

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

3

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - b. The energy that is causing movement or transformation of water.

If polar ice contained more salt than the surrounding seawater, it means that salt water rises and fresh water sinks. So the density of salt water will be less than the density of freshwater. Thermohaline circulation in oceans would change to salt water sinking at top and fresh water sinks.

5

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- a. They both destroy matter during energy conversion
- b. They both convert thermal energy into gravitational energy
- c. They both convert chemical energy into thermal energy
- d. They both convert kinetic energy into potential energy.

35 25

YOUR SCORE:

60

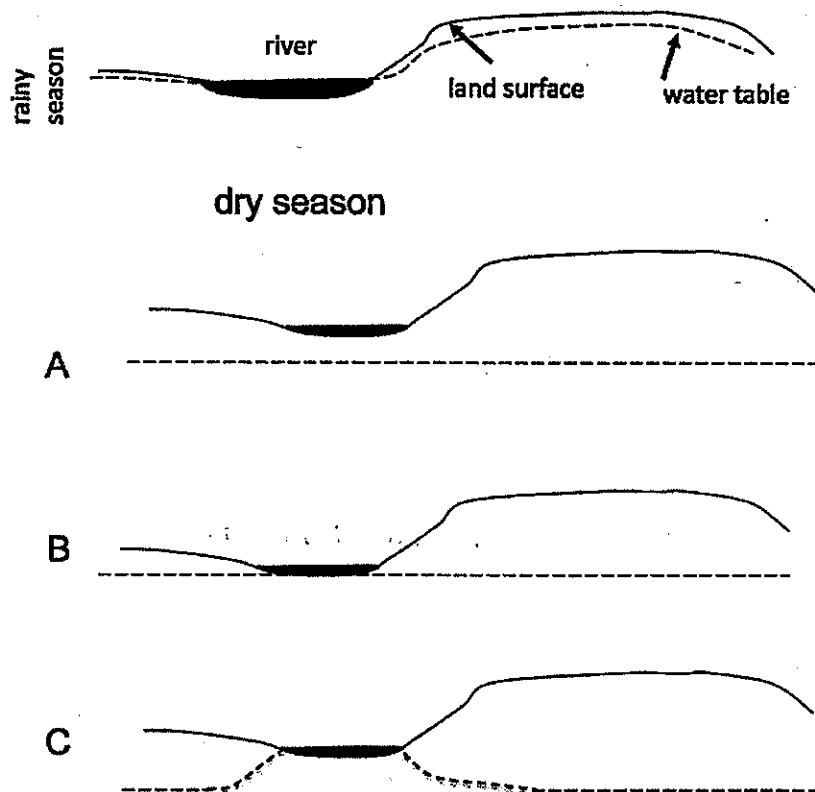
STUDENT ID #: A39474585; GROUP #: 23**MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.**

1. What happens when water molecules condense? 9
- Water molecules become larger
 - Gaseous water becomes liquid water
 - Hydrogen and oxygen atoms combine to form liquid water
 - The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
- The atmosphere
 - Oceans
 - Glaciers
 - Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
- Rainfall and surface runoff into the lake
 - Seasonal high water from the Mississippi River
 - Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____A____, then becomes water in a glacier through the process of ____B____, and then becomes water in clouds through the process of ____C____.
- A= evaporation, B= deposition, C= sublimation
 - A = condensation, B= precipitation, C= evaporation
 - A= sublimation, B= precipitation, C= evaporation
 - A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
- Liquid water from the pot condenses
 - Liquid water from the pot evaporates
 - Water vapor from the pot condenses
 - Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
- This is what one would predict with global warming
 - This is the opposite of what one would predict with global warming
 - Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

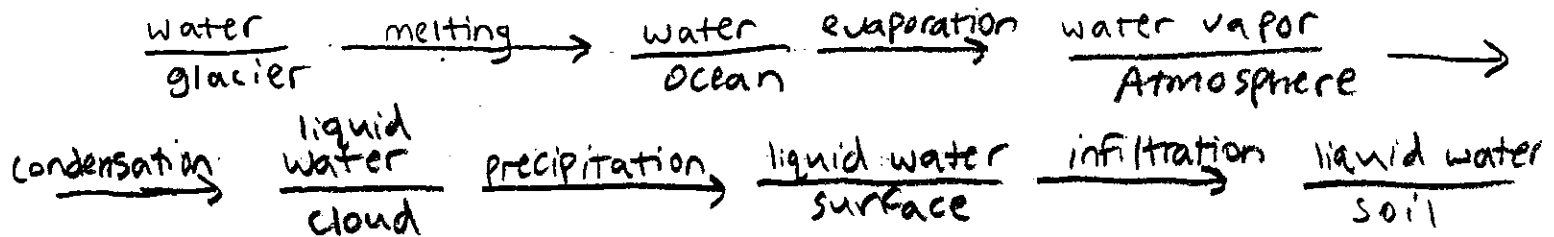


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- been greater
 - been less
 - remained the same
10. What happens when plants respire?
- Plants convert biomass into energy
 - Plants convert energy into biomass
 - Plants release energy

A39474585

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



First the water needs to melt and become liquid water in the ocean. Next, the water must evaporate into the atmosphere as a gas, and condense to form a cloud. Then the water can precipitate onto the surface which could be a potato farm. The water can then infiltrate into the soil and be taken up by the potato roots.

25

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

15 a. Thermohaline circulation happens because warm water is less dense than cold water and because of buoyancy it floats on top of the cooler water. Cold water is more dense, so it sinks which is why it is the coldest at the bottom of the ocean. Thermohaline circulation relies on the cool arctic water for the process to take place. Thermal energy causes the polar ice to melt. Because the polar ice has more salt content, it is more dense than the surrounding sea water and therefore will sink. Warmer water from the equatorial regions will also bring heat to the polar regions causing the polar ice to melt. [If all of this polar ice were to melt, thermohaline circulation might cease entirely]

Water from glacier → warm water from equator melting → water (more dense) ocean

Salty polar water → sea water

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

45 42

YOUR SCORE:

87

A39732455

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: A39732455; GROUP #: 23

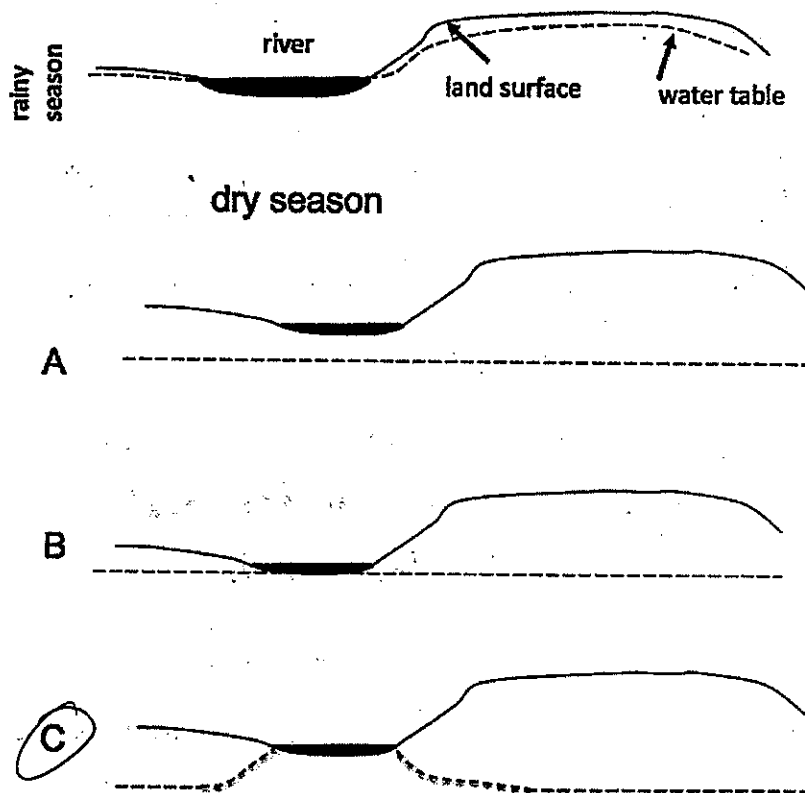
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 8
 - a. Water molecules become larger
 - ☒ b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - ☒ c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - ☒ c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
 - a. A= evaporation, B= deposition, C= sublimation
 - ☒ b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - a. Liquid water from the pot condenses
 - ☒ b. Liquid water from the pot evaporates
 - c. Water vapor from the pot condenses
 - d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - ☒ a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
 — b. A = gravitational, B= gravitational, C= thermal
 — ☒ c. A = gravitational, B= thermal, C= thermal
 d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- ☒ a. been greater
 b. been less
 c. remained the same
10. What happens when plants respire?
- ☒ a. Plants convert biomass into energy
 b. Plants convert energy into biomass
 c. Plants release energy

A39732455

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

3

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water

ice
glacier → Melting → liquid
ocean → evaporation → vapor
Atmosphere → circulation

→ vapor
atmosphere
above Idaho → Condensation → liquid
Cloud above
Idaho → precipitation

→ liquid
surface of
potato farm

water will fall into the ground due to gravity and be used by the potatoes to grow.

25

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water. *diff densities*

a. Circulation occurs in oceans because of the different densities of water in the ocean. It also occurs because of ocean temperature differences and currents. Water is warmer at the equator and rises to the surface. As it moves to the poles it becomes cooler and falls.

b. The energy that causes ^{equator} circulation of water is thermal, the sun directly heats low latitude water more. The composition of water also causes circulation, saltwater is more dense, therefore falls below freshwater.

If polar ice contained more salt than surrounding seawater, that would make it more dense, causing it to fall below the seawater. This would affect thermohaline circulation by increasing it because ice at the poles would sink.

20

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- ☐ They both destroy matter during energy conversion
- ☐ They both convert thermal energy into gravitational energy
- ☒ They both convert chemical energy into thermal energy
- ☐ They both convert kinetic energy into potential energy.

40 47

YOUR SCORE:

87

STUDENT ID #: A4176295; GROUP #: 24

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?

8

- a. Water molecules become larger
- ☒ b. Gaseous water becomes liquid water
- c. Hydrogen and oxygen atoms combine to form liquid water
- d. The temperature of water molecules decreases

water → ice
(slower)

2. Which of the following is the largest freshwater reservoir

- a. The atmosphere
- b. Oceans
- ☒ c. Glaciers
- d. Lakes and streams

3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?

- a. Rainfall and surface runoff into the lake
- b. Seasonal high water from the Mississippi River
- ☒ c. Ground water from beneath the surface

condensation

4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B and then becomes water in clouds through the process of C.

Precipitation

- a. A=evaporation, B=deposition, C=sublimation
- ☒ b. A=condensation, B=precipitation, C=evaporation
- c. A=sublimation, B=precipitation, C=evaporation
- d. A=precipitation, B=freezing, C=condensation

A - condensation

B -
C -

5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?

- a. Liquid water from the pot condenses
- b. Liquid water from the pot evaporates
- ☒ c. Water vapor from the pot condenses
- d. Water vapor from the pot evaporates

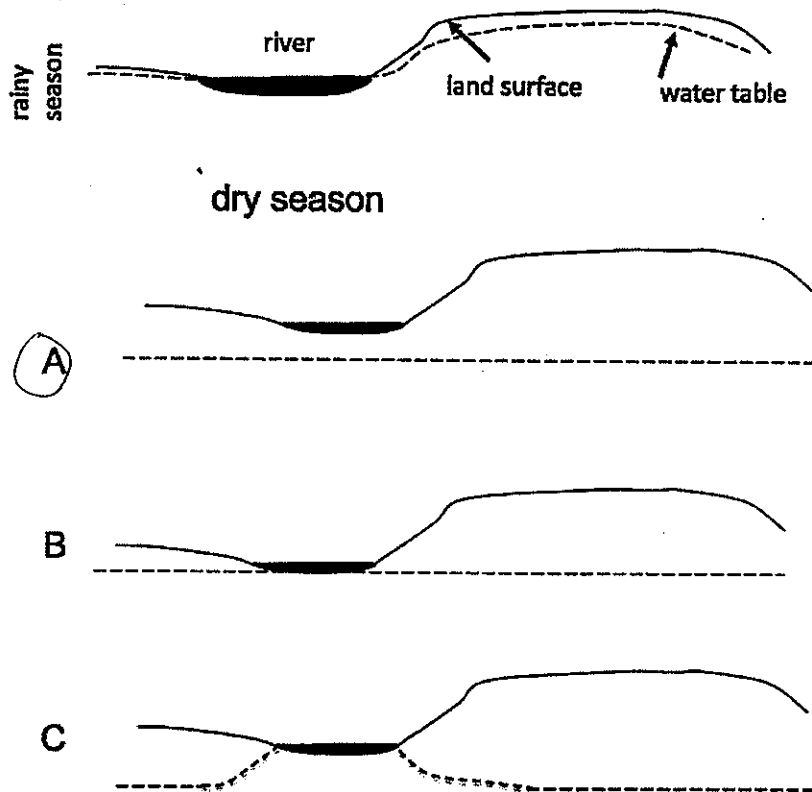
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?

- ☒ a. This is what one would predict with global warming
- b. This is the opposite of what one would predict with global warming
- c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



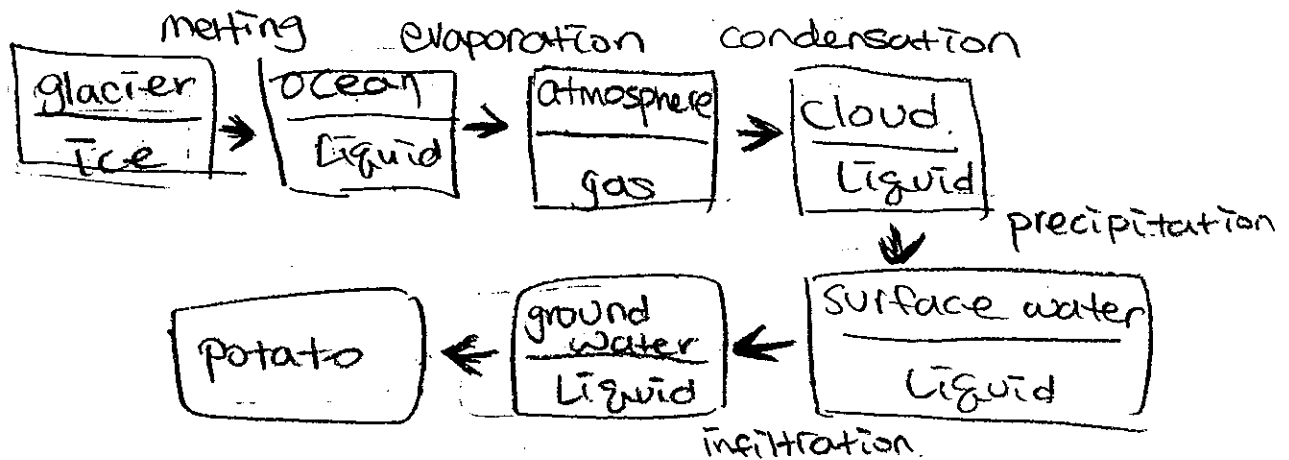
9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
b. been less
c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

AU136895

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



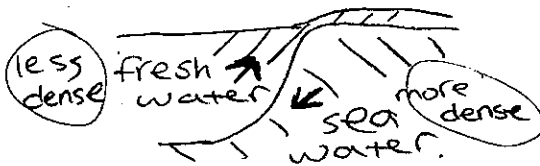
25

April 30 8:25

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

The ocean has thermohaline circulation because of difference of amount of salt and the temperature. If the water has high level of salt amount, it will have more dense than ~~of~~ less salt amount water.



if polar ice has more salt than the surrounding sea water, it will have more dense because of amount of salt. In my opinion, the polar ice will sink if it has more salt than surrounding.

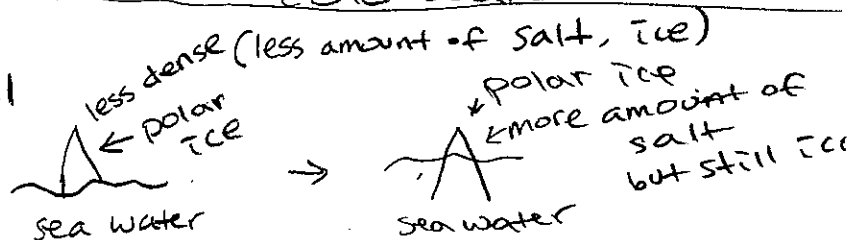
15

+

And also warm water has less density ~~of~~ than cold water. However the ice has less dense than water

Ice

get cold. Warm water
Cold water } get warm



EXTRA CREDIT (2 points)

XEC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

40 40

YOUR SCORE:

80

STUDENT ID #: A43091747; GROUP #: 24

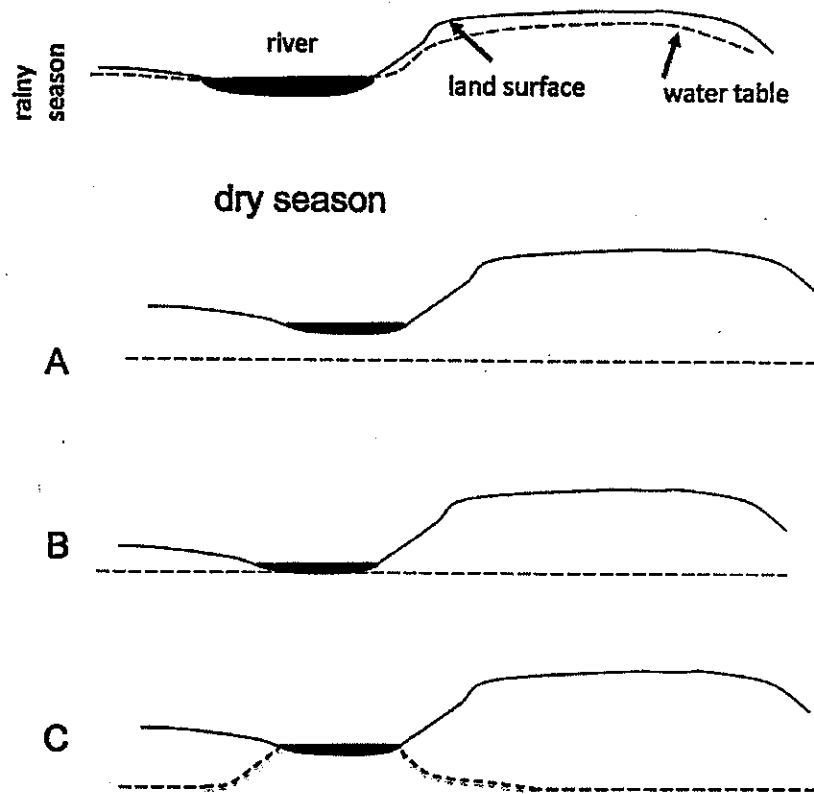
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?
a. Water molecules become larger
b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
a. Rainfall and surface runoff into the lake —
b. Seasonal high water from the Mississippi River
c. Ground water from beneath the surface —
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____A____, then becomes water in a glacier through the process of ____B____, and then becomes water in clouds through the process of ____C____.
a. A= evaporation, B= deposition, C= sublimation
b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
a. Liquid water from the pot condenses
b. Liquid water from the pot evaporates
c. Water vapor from the pot condenses
d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

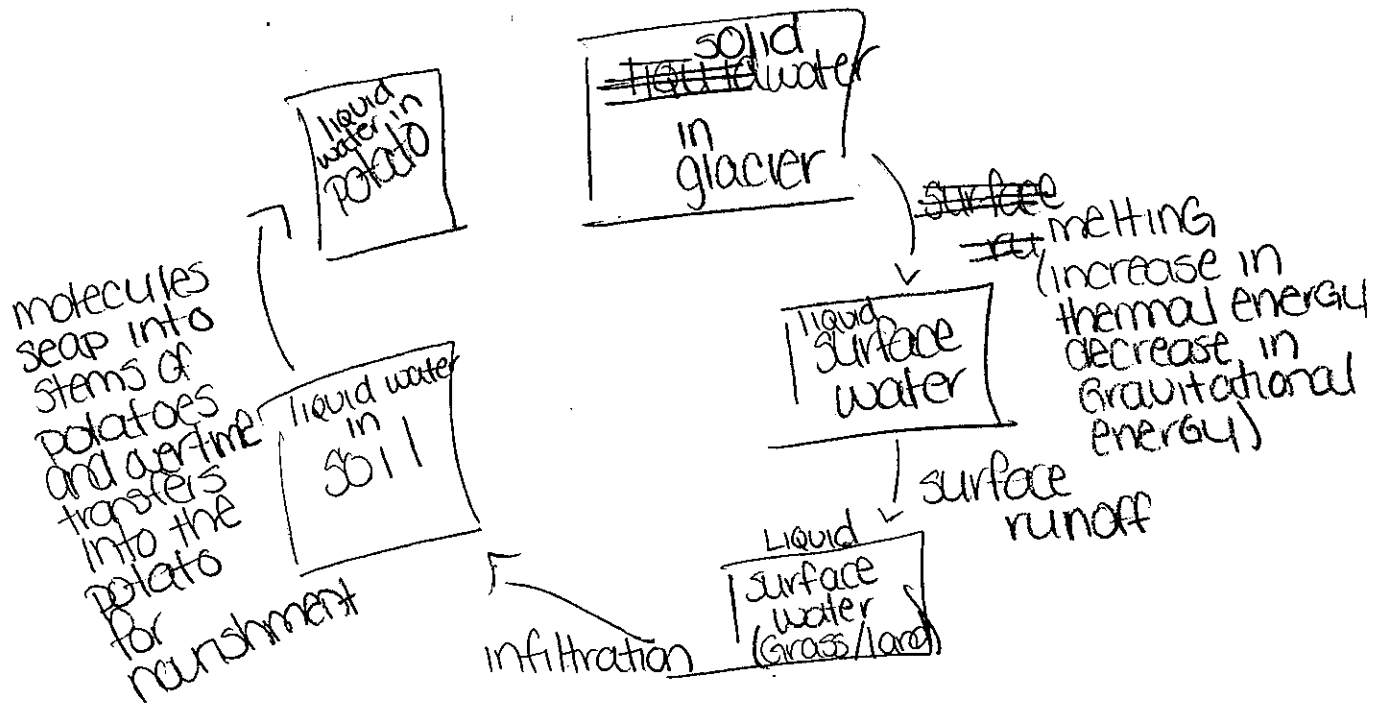


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

A43891747

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



Explanation:

25

~~Solid~~ ~~water~~ in glacier melts and ends on surface as liquid. Surface runoff occurs and the water is transported to a grassy land where infiltration then occurs allowing the liquid water to go into the soil. As a farmer plants his potatoes, the water that is currently in the soil nourishes the potato and soon becomes a part of it.

AU3091747

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - b. The energy that is causing movement or transformation of water.

5

If ice contained more salt than the surrounding seawater from which it freezes, the ice's density would increase causing it to be more likely to sink. The salt could begin a chemical reaction with the ice causing it to melt quicker than it normally would do so. The process of water freezing to ice and back again would happen quicker.

EXTRA CREDIT (2 points)

- EC. How are burning wood and respiration similar?
- a. They both destroy matter during energy conversion
 - b. They both convert thermal energy into gravitational energy
 - c. They both convert chemical energy into thermal energy
 - d. They both convert kinetic energy into potential energy.

25 30

YOUR SCORE:

55

STUDENT ID #: A40208496; GROUP #: 24

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 9
- Water molecules become larger
 - ☒ Gaseous water becomes liquid water
 - Hydrogen and oxygen atoms combine to form liquid water
 - The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
- The atmosphere
 - Oceans
 - ☒ Glaciers
 - Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
- Rainfall and surface runoff into the lake
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 - ☒ Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
- A= evaporation, B= deposition, C= sublimation
 - ☒ A = condensation, B= precipitation, C= evaporation
 - A= sublimation, B= precipitation, C= evaporation
 - A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
- liquid water evaporates creates water droplets or white cloud is the water vapor*
- Liquid water from the pot condenses
 - ☒ Liquid water from the pot evaporates
 - Water vapor from the pot condenses
 - Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
- ☒ This is what one would predict with global warming
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A4208496

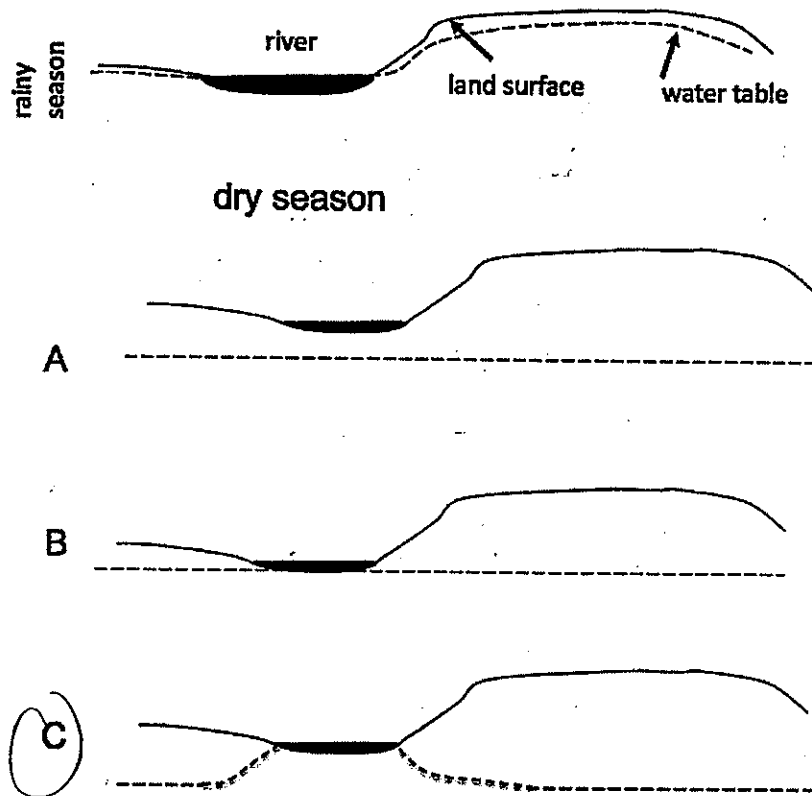
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- ~~b. A = gravitational, B= gravitational, C= thermal~~
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:

- a. been greater
- b. been less
- c. remained the same

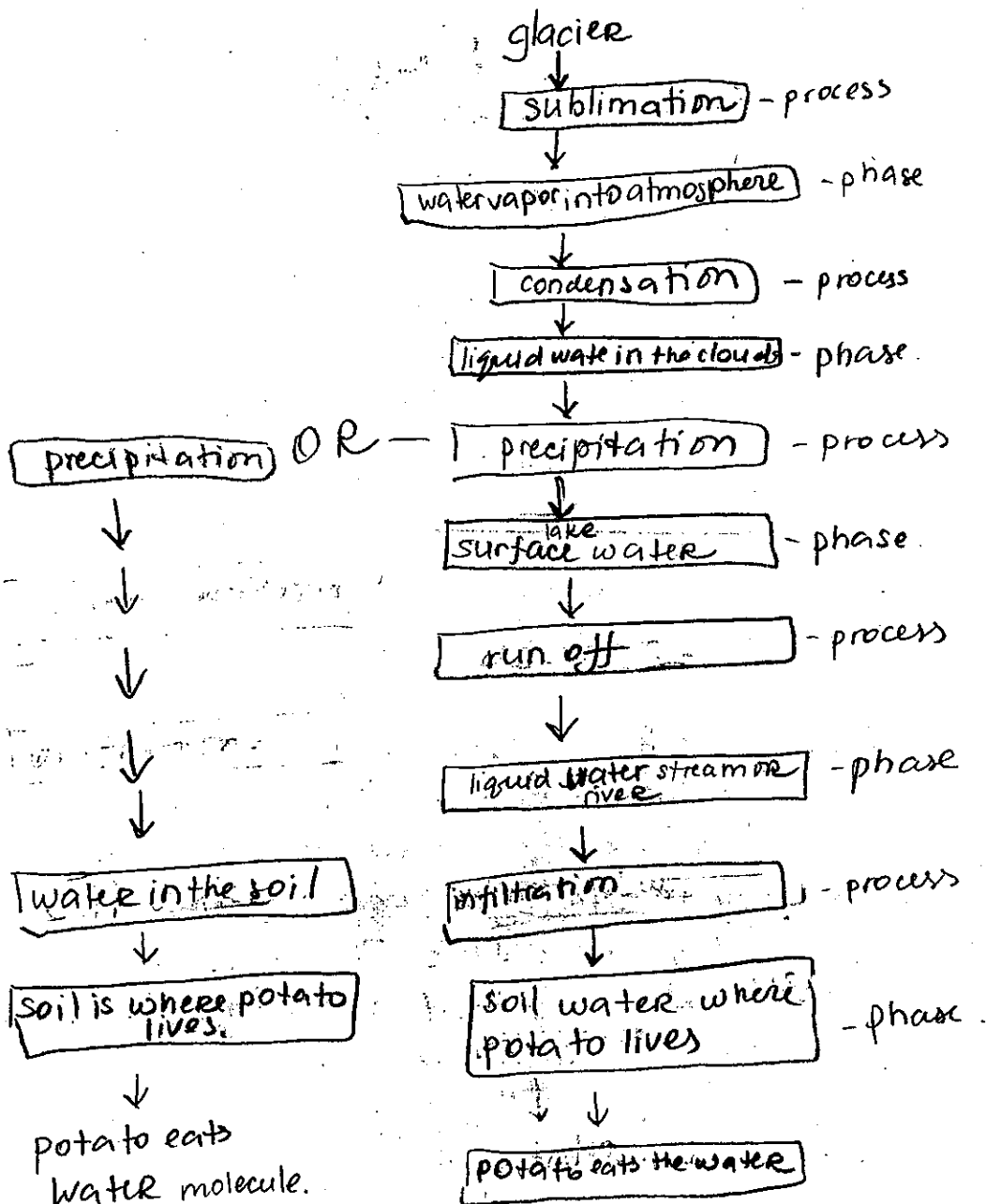
10. What happens when plants respire?

- a. Plants convert biomass into energy
- b. Plants convert energy into biomass
- c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



25

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- ✓ a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - ✓ b. The energy that is causing movement or transformation of water.

20

If polar ice contained more salt than the surrounding seawater the thermohaline circulation would change because the ice glaciers would have more salt → therefore have more density. And if the sea water would be losing too much salt it would be less dense. Even though the ~~ice~~ solid water has less density than liquid, the salted ice would sink to the bottom off the ocean, which now has less density; instead of floating on the water.

The circulation happens because of the global density gradients created by heat & fresh water fluxes. The circulation in the water in the polar regions comes from the equator, which is driven by the winds. The warm water is on the surface & cold water on the bottom, because it has bigger density. When circulation happens the heat is transferred to North Pole, where warm water on the surface & it freezes & becomes ice, with less saltiness. If that would change, the ice that would contain more salt would be on the bottom. So when circulation happens & the previously cold water that was driven to equator will not be moving to equator, because there is ice on the bottom of the ocean instead of cold water. The equatorial regions would become hotter now. The energy that is causing movement or transformation of water are chemical potential & thermal. Ocean circulation is driven by density differences by air masses, wind pushes water.

- EXTRA CREDIT (2 points) EC. How are burning wood and respiration similar? water phase, & thermal energy causes it freeze
- a. They both destroy matter during energy conversion
 - b. They both convert thermal energy into gravitational energy
 - c. They both convert chemical energy into thermal energy
 - d. They both convert kinetic energy into potential energy.

45 47

YOUR SCORE:

92

A

1

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

STUDENT ID #: A43767708 ; **GROUP #:** 25

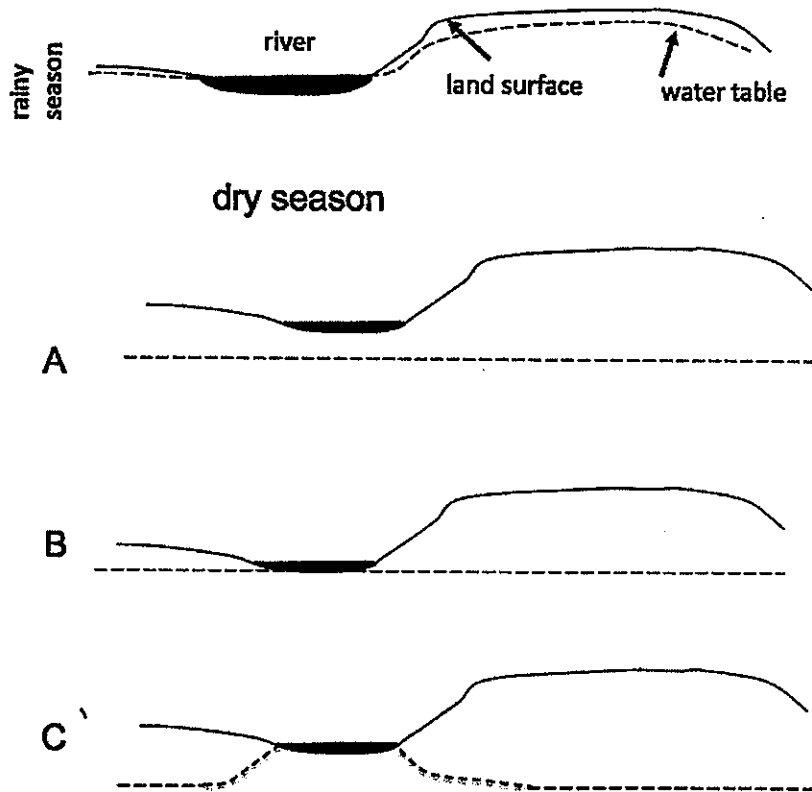
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 8
- Water molecules become larger
 - Gaseous water becomes liquid water
 - Hydrogen and oxygen atoms combine to form liquid water
 - The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
- The atmosphere
 - Oceans
 - Glaciers
 - Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
- Rainfall and surface runoff into the lake
 - Seasonal high water from the Mississippi River
 - Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
- A= evaporation, B= deposition, C= sublimation
 - A = condensation, B= precipitation, C= evaporation
 - A= sublimation, B= precipitation, C= evaporation
 - A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
- Liquid water from the pot condenses
 - Liquid water from the pot evaporates
 - Water vapor from the pot condenses
 - Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
- This is what one would predict with global warming
 - This is the opposite of what one would predict with global warming
 - Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

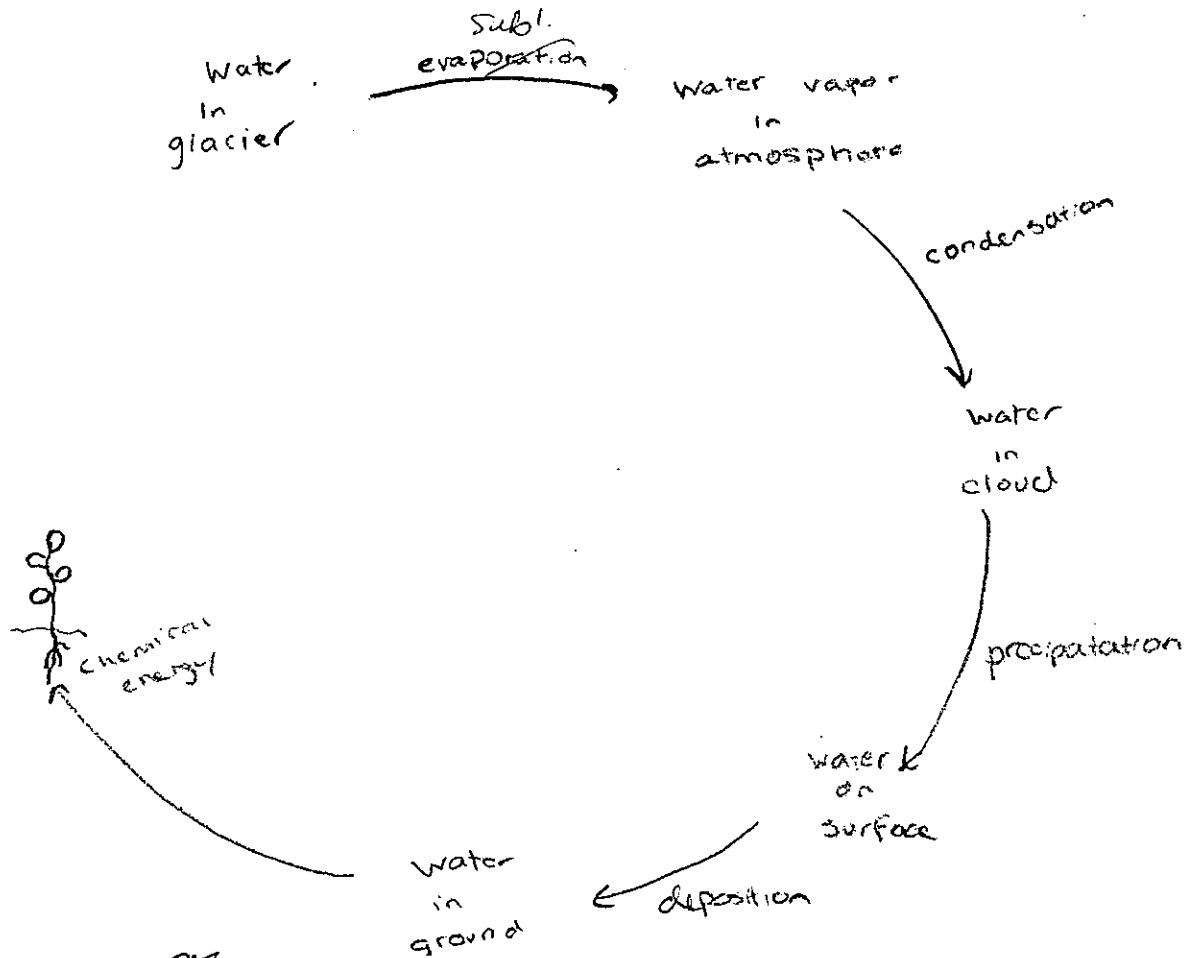


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

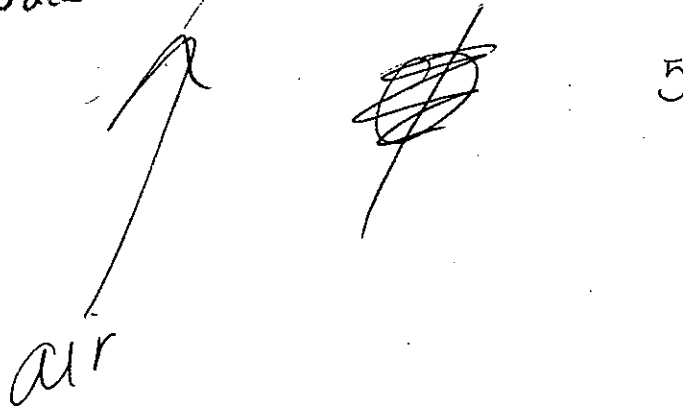
- Water phase at each step in the journey
- A name for each process that moves or transforms water



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- OCEAN
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.

Atmospheric circulation occurs because warmer water is less dense than colder water and air temperatures differ among latitudes. At the lower latitudes, warmer air would rise, and at higher latitudes colder air would sink. If the air had hotter temperatures the air would rise higher before it could actually sink. Warmer air would move faster towards the poles before it sinks. Therefore the Hadley circulation cell shows that from the equator, it's approx. 30 degrees N and S latitudes which reaches higher latitudes



EXTRA CREDIT (2 points)

EC: How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

45 10

YOUR SCORE:

55

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: ~~XXXXXXXXXXXX~~ 39872700; GROUP #: 26

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?

- ☐ a. Water molecules become larger
- ☒ b. Gaseous water becomes liquid water
- ☐ c. Hydrogen and oxygen atoms combine to form liquid water
- ☐ d. The temperature of water molecules decreases

condensation
vapor to liquid

6

2. Which of the following is the largest freshwater reservoir

- a. The atmosphere
- b. Oceans
- ☒ c. Glaciers
- d. Lakes and streams

3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?

- ☒ a. Rainfall and surface runoff into the lake
- b. Seasonal high water from the Mississippi River
- c. Ground water from beneath the surface

4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____A____, then becomes water in a glacier through the process of ____B____, and then becomes water in clouds through the process of ____C____.

- a. A= evaporation, B= deposition, C= sublimation
- ☒ b. A = condensation, B= precipitation, C= evaporation
- c. A= sublimation, B= precipitation, C= evaporation
- d. A = precipitation, B= freezing, C= condensation

5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?

- a. Liquid water from the pot condenses
- b. Liquid water from the pot evaporates
- ☒ c. Water vapor from the pot condenses
- d. Water vapor from the pot evaporates

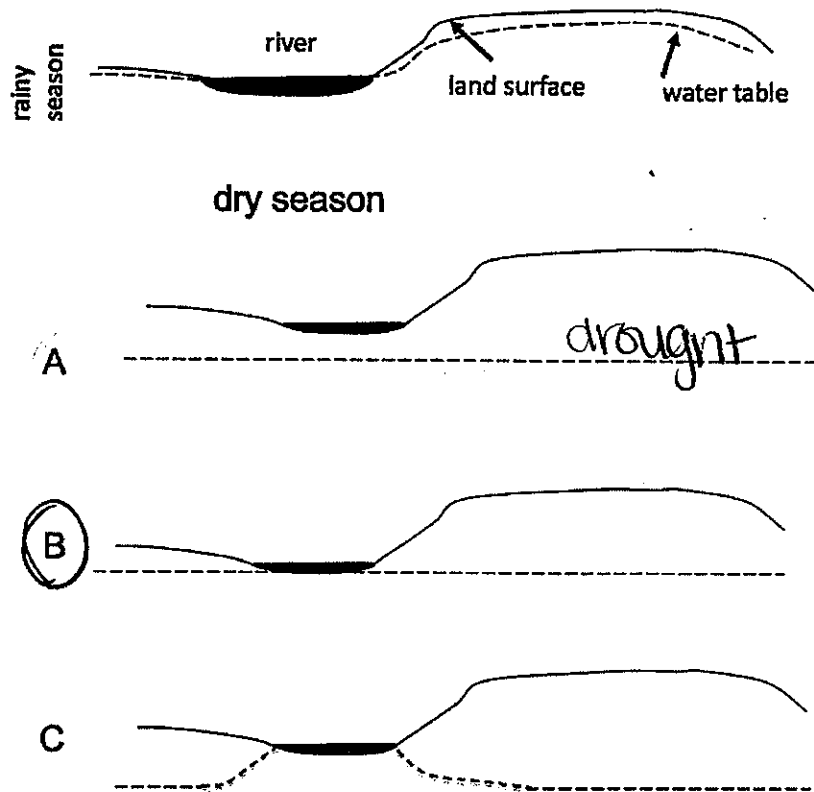
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?

- ☒ a. This is what one would predict with global warming
- b. This is the opposite of what one would predict with global warming
- c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
 → b. A = gravitational, B= gravitational, C= thermal
 c. A = gravitational, B= thermal, C= thermal
 d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

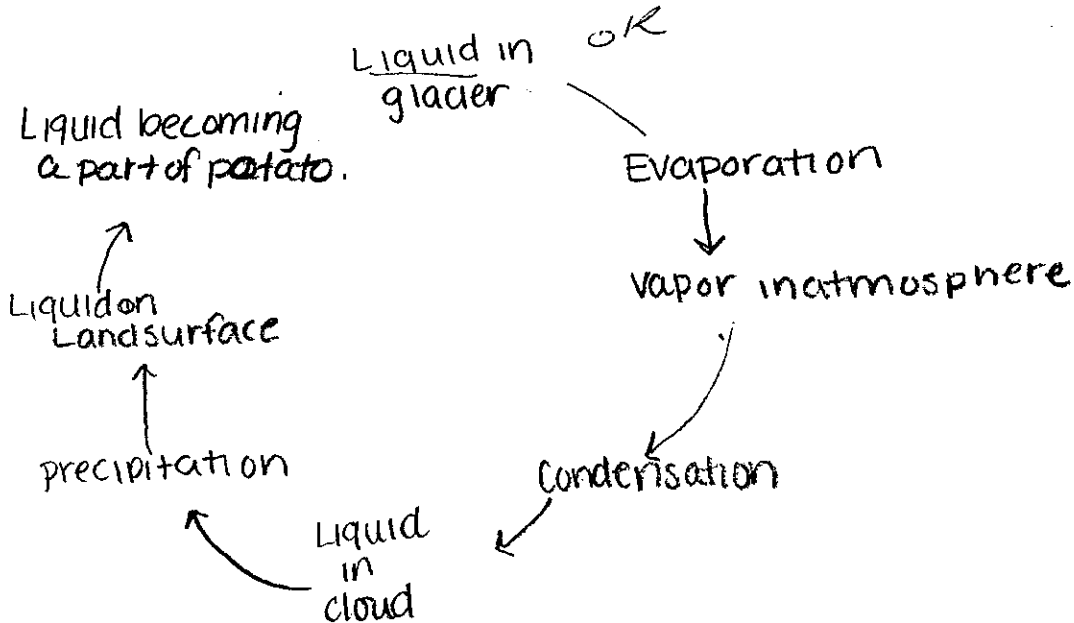


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 b. been less
 c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 b. Plants convert energy into biomass
 c. Plants release energy

A39872700

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



25

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.

When salt (thermohaline) is added to a liquid the density increases. Therefore since the polar ice has a lower temperature the density is higher. Adding more salt to this equation would make the ice more dense than surrounding water. Ultimately the ice would PIOT SINK! as a result of the increased density as well as buoyancy. The Hadley circulation cell would increase in density. This is also occurring due to gravitational energy because of the circulation in the ocean being changed.

2

✗ EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

30 27


YOUR SCORE:

57

STUDENT ID #: A40850791; GROUP #: 26

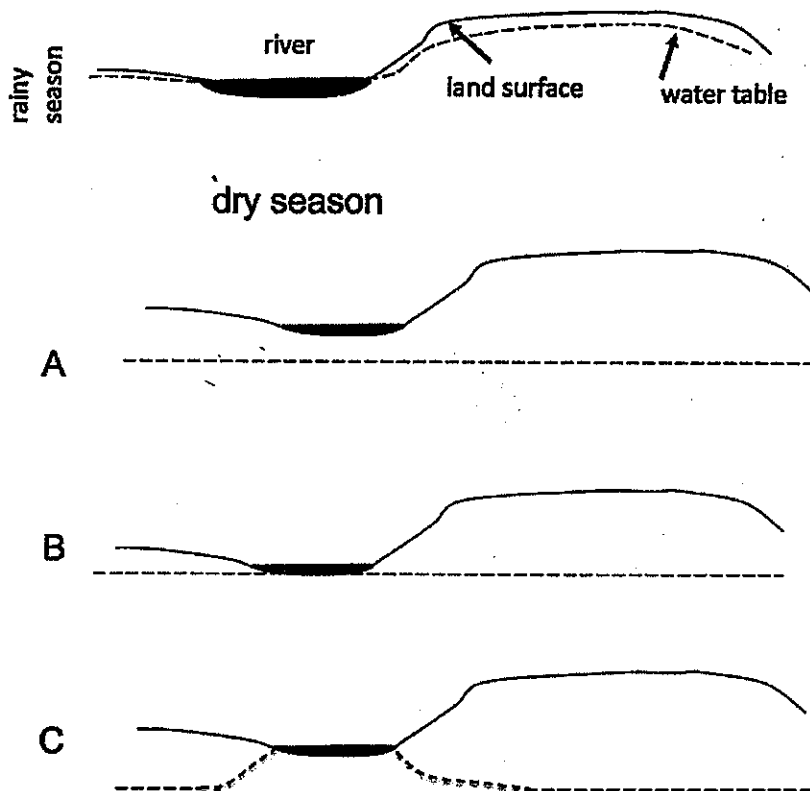
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 6
a. Water molecules become larger
☒ b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
a. Rainfall and surface runoff into the lake
b. Seasonal high water from the Mississippi River
c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
a. A= evaporation, B= deposition, C= sublimation
☒ b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
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5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
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7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy. 

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

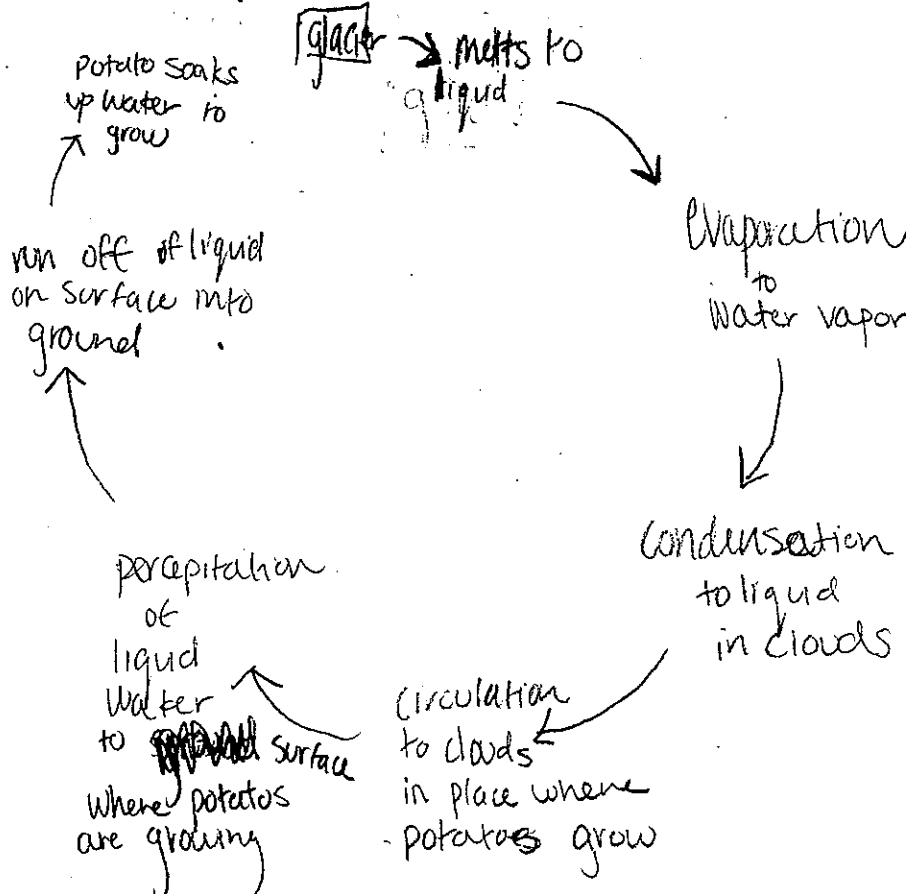


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
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10. What happens when plants respire? -
- a. Plants convert biomass into energy
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SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

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25

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- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.

In thermohaline circulation, salt water is more dense. Because it is more dense, it falls to the bottom pushing the freshwater which is less dense to the top. This exchange creates the circulation. If polar ice contained more salt than the surrounding seawater, thermohaline circulation would happen at a quicker rate because it would be more dense than before. This would be a slight change. The energy being used is chemical kinetic.

X EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

30 35

YOUR SCORE:

65

STUDENT ID #: A42707740; GROUP #: 26

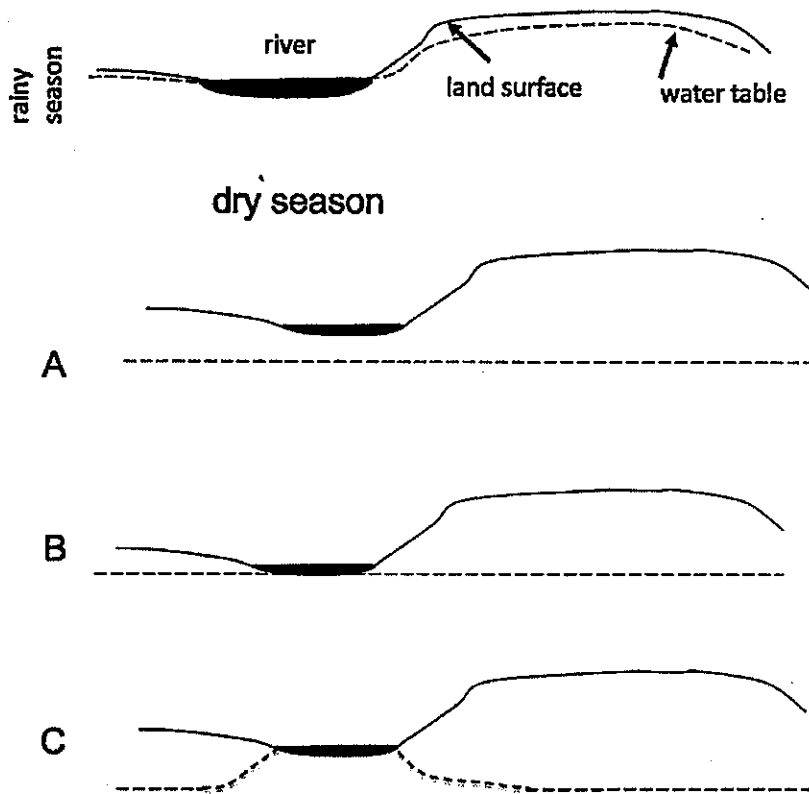
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 8
 - a. Water molecules become larger
 - b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
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4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
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7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

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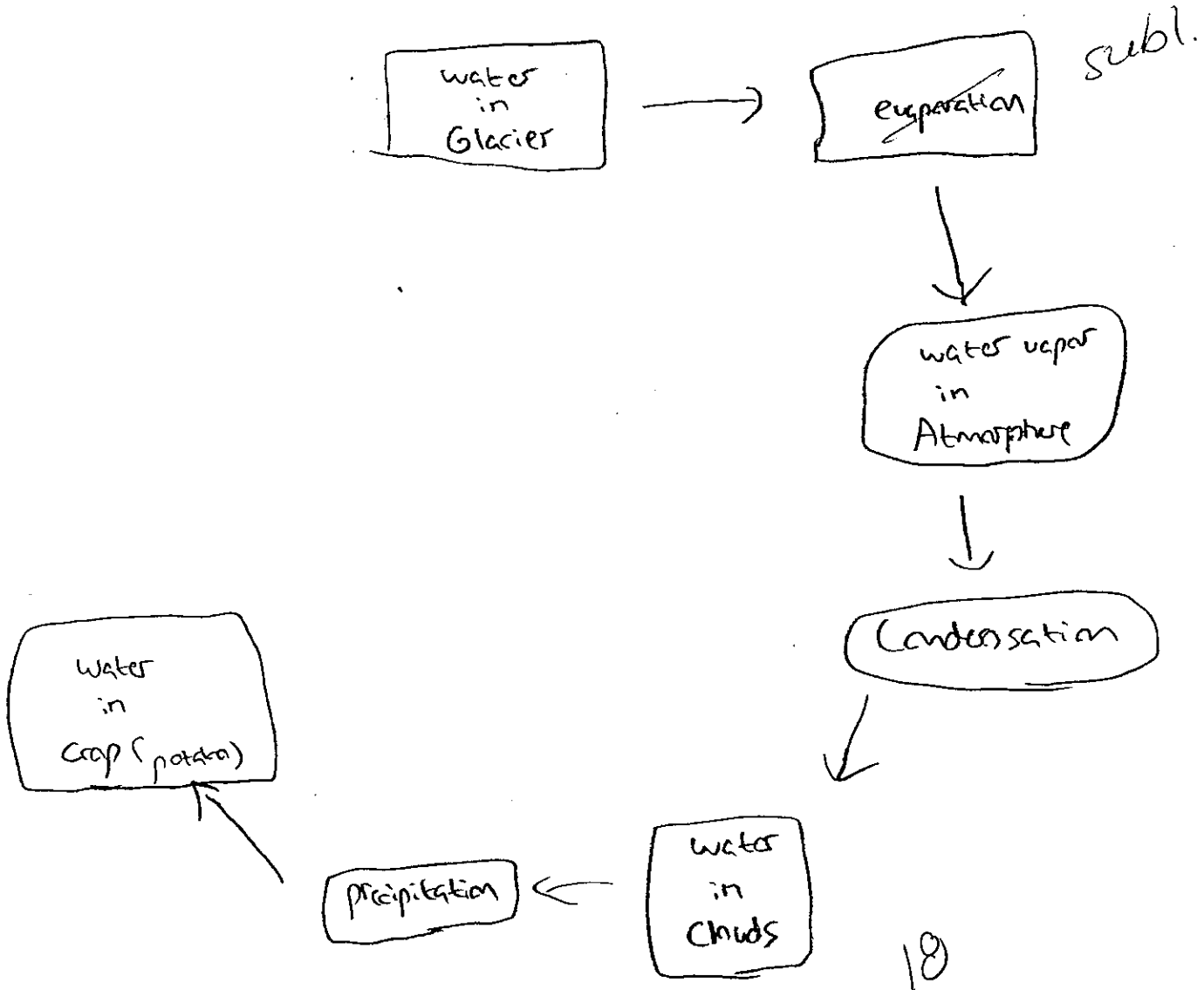


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- a. been greater
 - b. been less
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10. What happens when plants respire?
- a. Plants convert biomass into energy
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SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

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(Convection)
Circulation occurs due to the density and porosity?
of warm/cold, salty/not salty water. Warm water from the equator heads towards the poles on the upper surface, while cooler water travels the lower half from the poles back to the equator. Movement is due to wind currents and density driven forces.
If there were less salt in ice when it froze this would mean there would be an increase in salt of the sea water. In turn, this would not change thermohaline circulation too much because the density of the salt would be distributed evenly whereas the temperatures would not be affected, which drives the under and over circulation of the ocean as well as wind and other density driven forces.

20

- 2 EXTRA CREDIT (2 points)
EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- ☒ They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

40 40

YOUR SCORE:

80

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: A42003289; GROUP #: 26

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?

10

- a. Water molecules become larger
- b. Gaseous water becomes liquid water
- c. Hydrogen and oxygen atoms combine to form liquid water
- d. The temperature of water molecules decreases

2. Which of the following is the largest freshwater reservoir

- a. The atmosphere
- b. Oceans
- c. Glaciers
- d. Lakes and streams

3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?

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A42003289

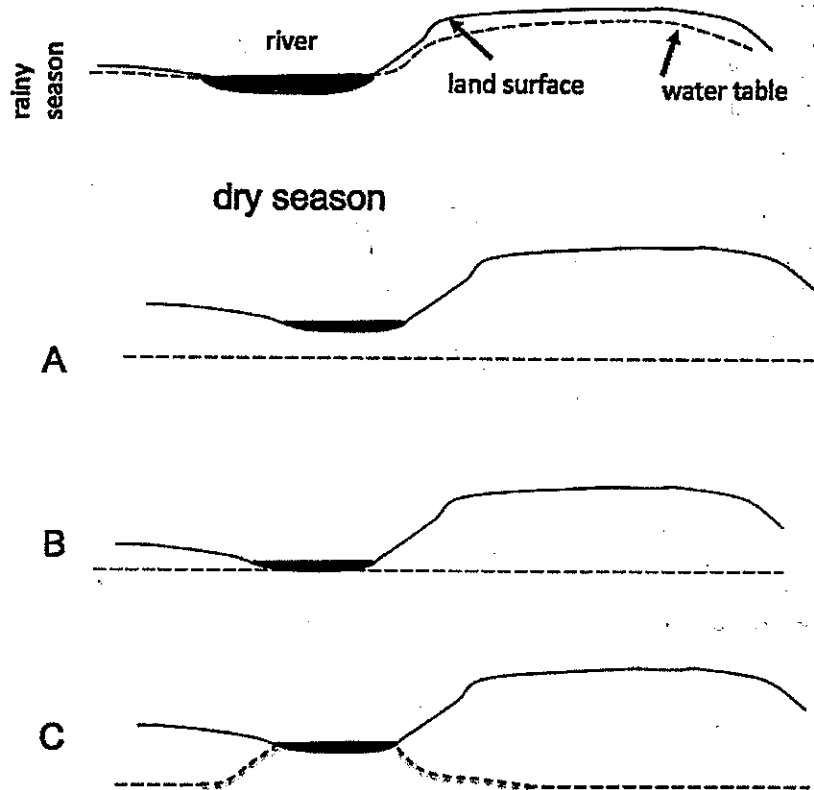
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A = chemical, B = thermal, C = thermal
- b. A = gravitational, B = gravitational, C = thermal
- c. A = gravitational, B = thermal, C = thermal
- d. A = thermal, B = thermal, C = thermal

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- a. been greater
 - b. been less
 - c. remained the same
- density of ice = 0.9 g/cc
density of water = 1 g/cc

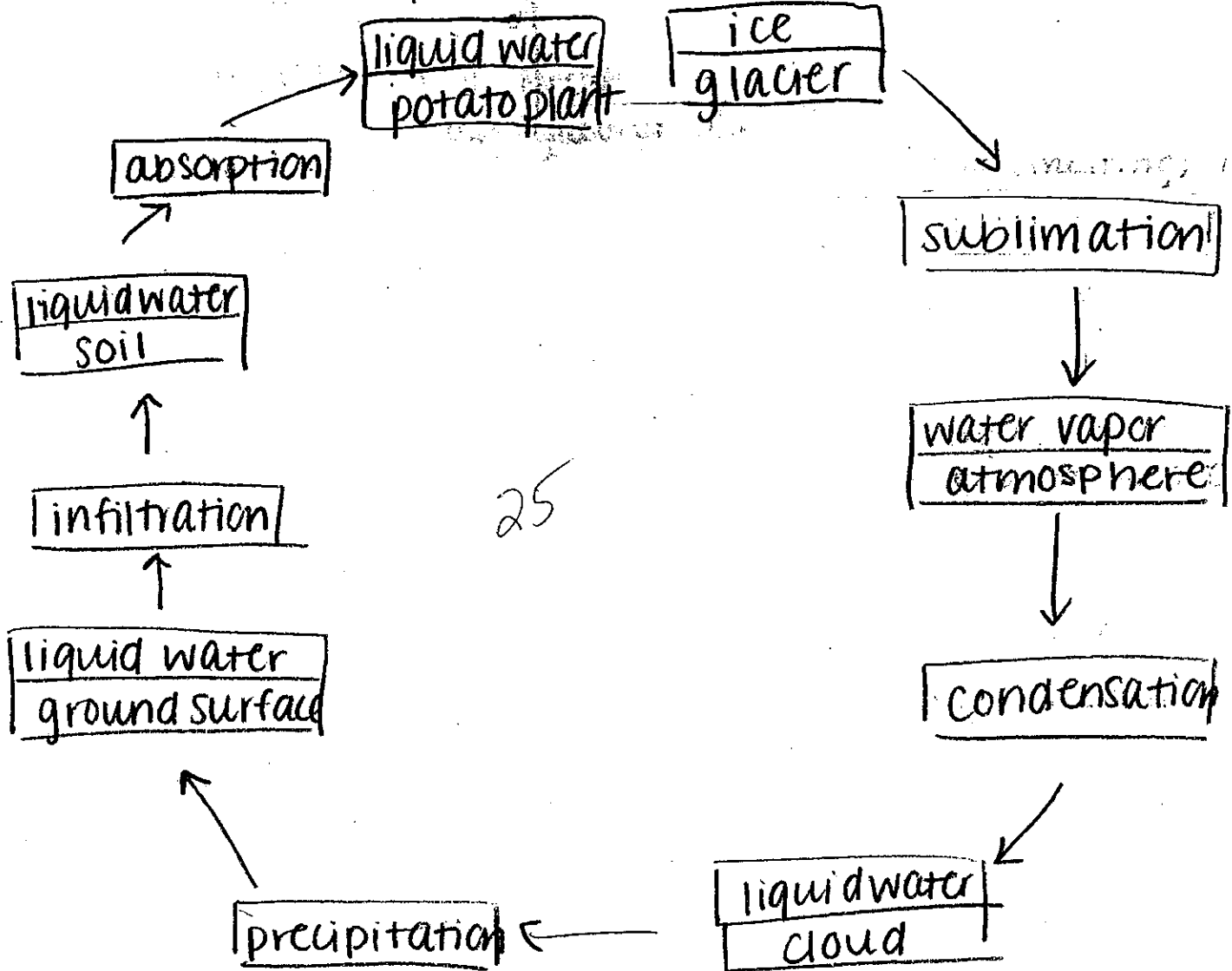
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

A42003289

SHORT ANSWER. 25 points each (50 points total)

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- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.

Saltwater is more dense than freshwater. If polar ice contained more salt than the surrounding seawater from which it freezes, then the ice would not float because bouancy would make the ice sink from a result of both gravitational and thermal energy. Because thermohaline circulation causes there to be a warmer water flow to the poles, this would be disrupted. The ice would sink, providing no opportunity for it to melt. Warmer water would still be at the surface, but ice and colder water would be at the bottom. Instead of circulating, the water would remain stagnant. ✓

25

2 EXTRA CREDIT (2 points)
EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

50 52

YOUR SCORE:

102 ? 4

A 42704999

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: A42704999; GROUP #: 27

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?

- a. Water molecules become larger
- ☒ b. Gaseous water becomes liquid water
- c. Hydrogen and oxygen atoms combine to form liquid water
- d. The temperature of water molecules decreases

6

2. Which of the following is the largest freshwater reservoir

- ~~a.~~ The atmosphere
- b. Oceans
- c. Glaciers
- ☒ d. Lakes and streams

3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?

- ☒ a. Rainfall and surface runoff into the lake
- ~~b.~~ Seasonal high water from the Mississippi River
- c. Ground water from beneath the surface

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- a. A= evaporation, B= deposition, C= sublimation
- ☒ b. A = condensation, B= precipitation, C= evaporation
- c. A= sublimation, B= precipitation, C= evaporation
- d. A = precipitation, B= freezing, C= condensation

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- a. Liquid water from the pot condenses
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A42704999

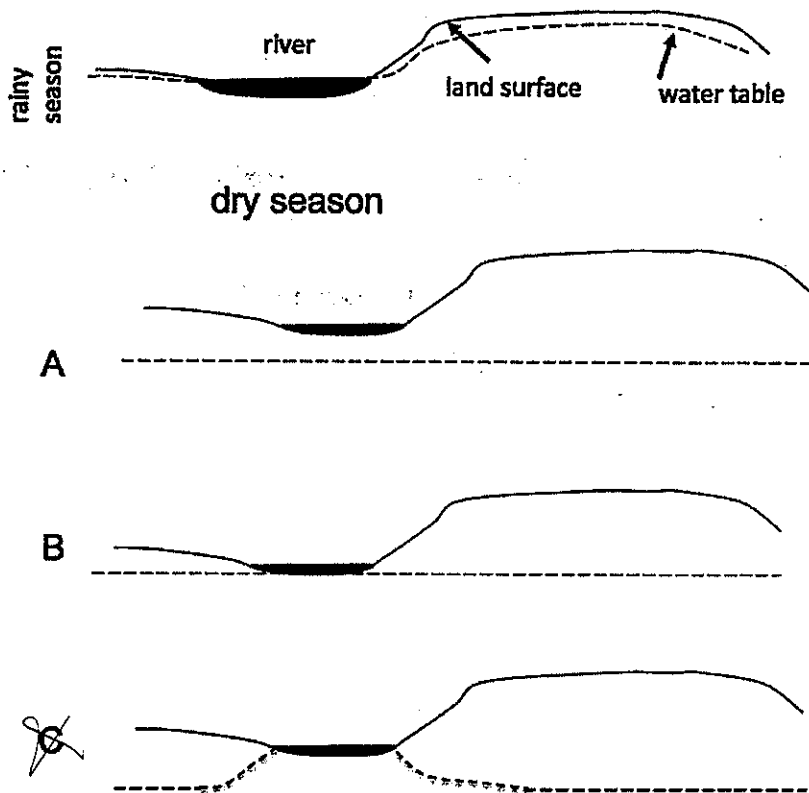
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- been greater
 - been less
 - remained the same
10. What happens when plants respire?
- Plants convert biomass into energy
 - Plants convert energy into biomass
 - Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water

Glacier
solid Sublimation Atmosphere
Gas Condensation Cloud
liquid Precipitation
surface
liquid infiltration Soil
liquid the water will then be absorbed
by the roots in the plants

2. When ice forms from seawater, the ice contains less salt than the remaining water.

Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

Energy → Gravitational potential
Gravitational kinetic
Thermal Chemical

Circulation occurs because of the temperature differences in the water and because of the salt in the water. If water were to freeze (thermal/chemical energy) with more salt in the ice than in the water, circulation would halt. This is because thermohaline circulation uses salt as a driving force. If there is no salt in the water, the drive will discontinue and the temperature of the oceans would be affected.

There would no longer be cool water going to the equator, or warm water going to the poles, causing extreme temperatures in both regions.

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- c. They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

30 42

YOUR SCORE:

72

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: A42669614 ; GROUP #: 27

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?

- a. Water molecules become larger
- ☒ b. Gaseous water becomes liquid water
- c. Hydrogen and oxygen atoms combine to form liquid water
- d. The temperature of water molecules decreases

7

2. Which of the following is the largest freshwater reservoir

- a. The atmosphere
- b. Oceans
- ☒ c. Glaciers
- d. Lakes and streams

3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?

- ☒ a. Rainfall and surface runoff into the lake
- b. Seasonal high water from the Mississippi River
- c. Ground water from beneath the surface

4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____A____, then becomes water in a glacier through the process of ____B____, and then becomes water in clouds through the process of ____C____.

- a. A= evaporation, B= deposition, C= sublimation
- ☒ b. A = condensation, B= precipitation, C= evaporation
- c. A= sublimation, B= precipitation, C= evaporation
- d. A = precipitation, B= freezing, C= condensation

☒ 5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?

- a. Liquid water from the pot condenses
- ☒ b. Liquid water from the pot evaporates
- c. Water vapor from the pot condenses
- d. Water vapor from the pot evaporates

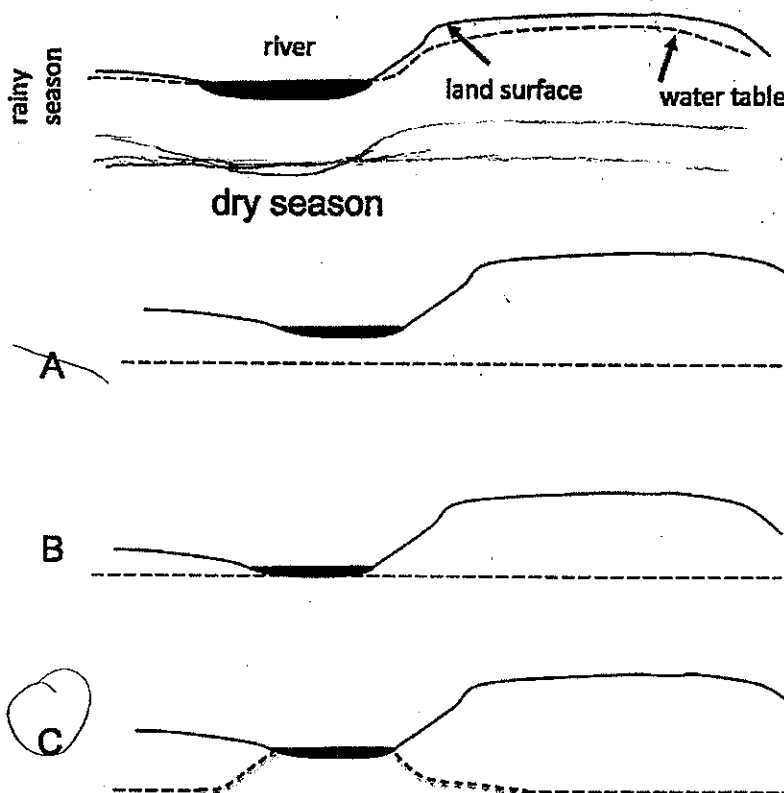
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?

- ☒ a. This is what one would predict with global warming
- b. This is the opposite of what one would predict with global warming
- c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

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8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:

- a. been greater
b. been less
c. remained the same

ice < water
if ice > water
rise?

10. What happens when plants respire?

- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

A42669614

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

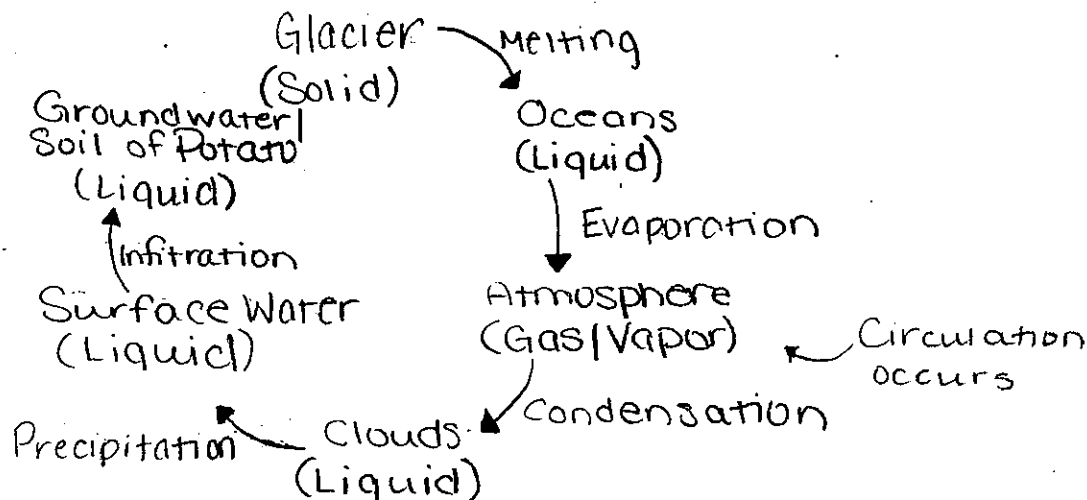
3

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
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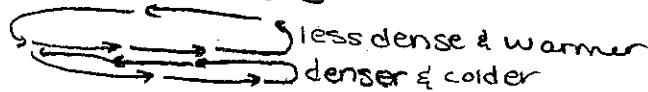
Glacier → Potato



25

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
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in seawater
Circulation happens because of temperature and density (salinity). The more salt it has, the more dense and therefore circulates towards the bottom of the seawater.



In oceans density places a larger role in the circulation of water than temperature so with more salt the circulation would change, explain

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

35 37

YOUR SCORE:

72

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: A424222222 ; **GROUP #:** 27

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 7
 - a. Water molecules become larger
 - ☒ b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - ☐ d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - c. Glaciers
 - ☒ d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - ☒ c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
 - a. A= evaporation, B= deposition, C= sublimation
 - ☒ b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - a. Liquid water from the pot condenses
 - b. Liquid water from the pot evaporates
 - ☒ c. Water vapor from the pot condenses
 - d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - ☒ a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

A42422266

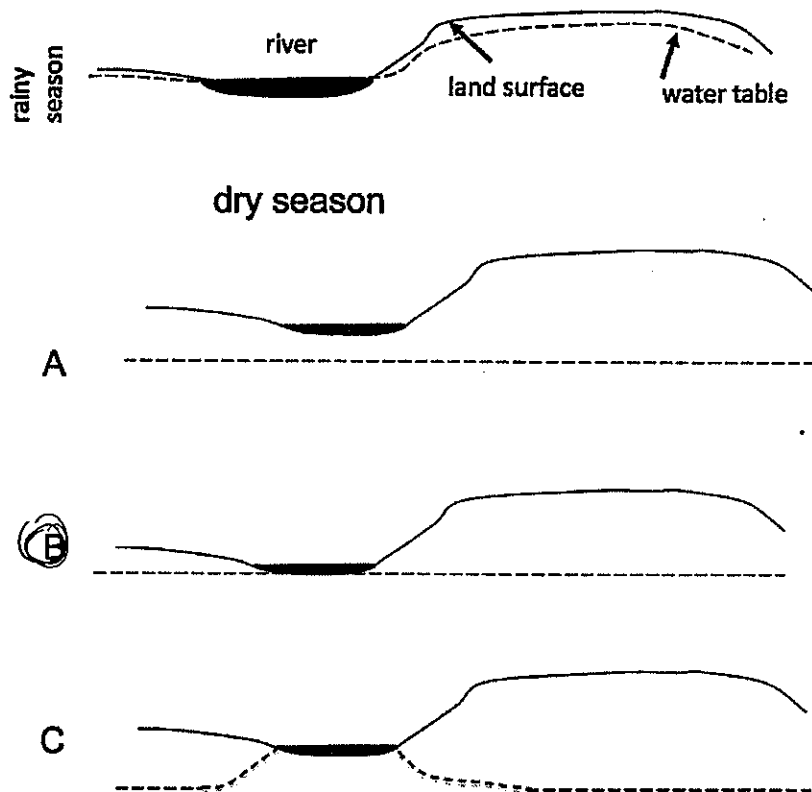
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
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8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- Ⓐ been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - Ⓒ Plants release energy

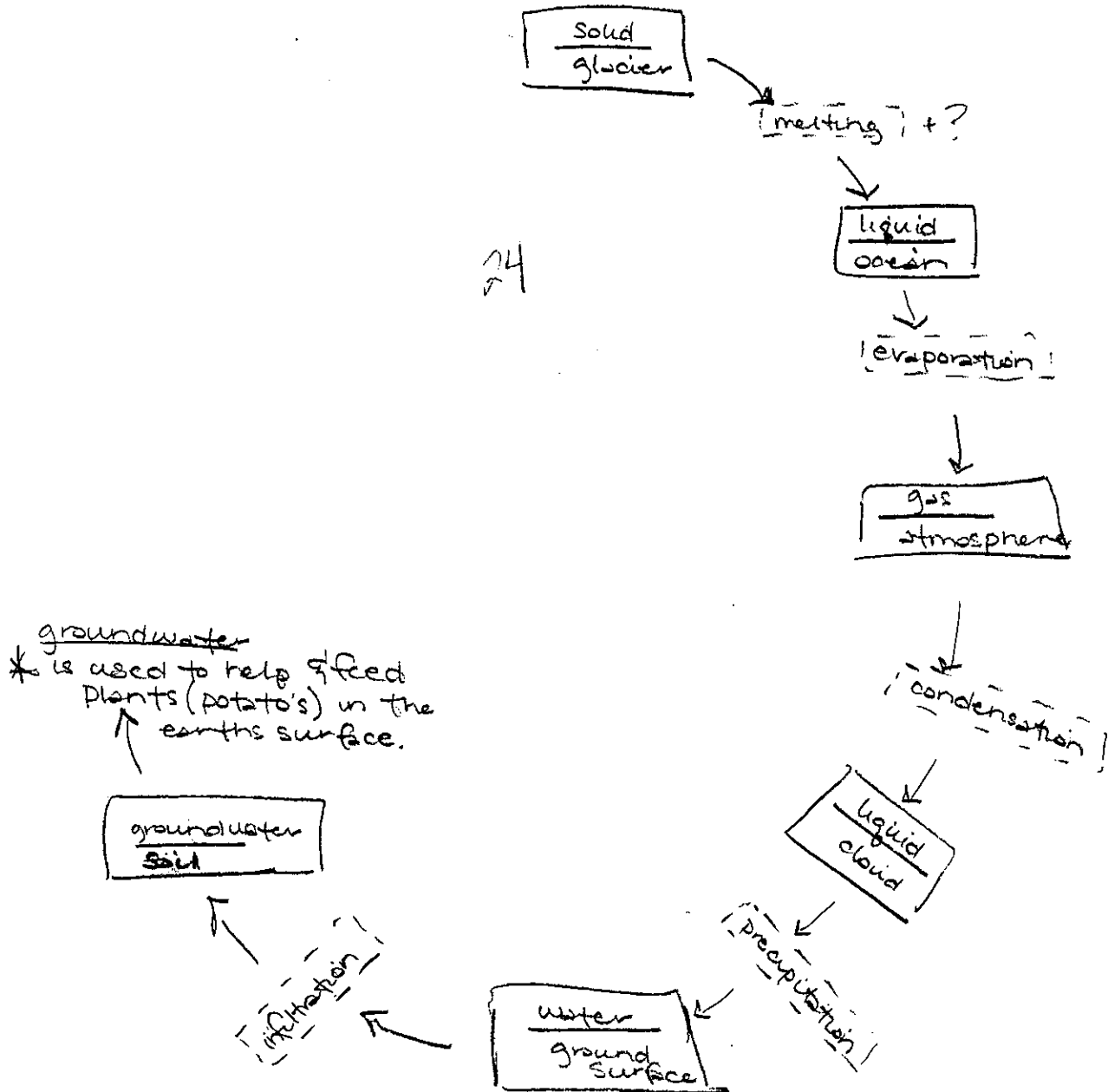
A42422266

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

3

SHORT ANSWER. 25 points each (50 points total)

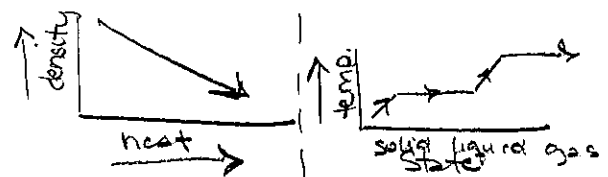
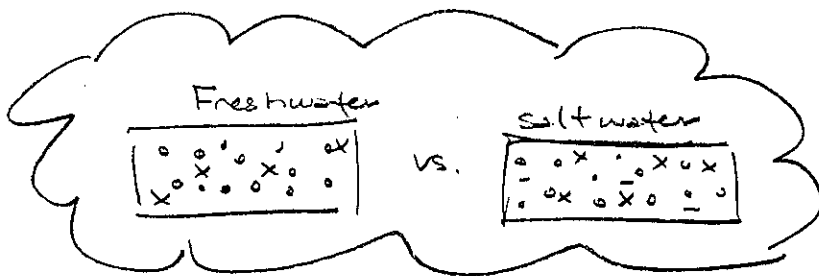
1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
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2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

Ice contains less salt than the remaining salt water because salt water holds more ions. In changing from a liquid to solid, the ions form bonds changing the salt water to a less dense, and more fresh water. Also with the salt water, it holds a much ^{hi} lower density meaning fresh water has a ^{low} higher density and there for when becoming a solid, the (ion bonds) are often left out/dropped to remain in the water leaving the glacier less dense with less salt than the water surrounding it allowing it to float.



EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- ☒ They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

35 30

YOUR SCORE:

65

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: A40967142 ; **GROUP #:** 27

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?

6

- ☒ a. Water molecules become larger
- b. Gaseous water becomes liquid water
- c. Hydrogen and oxygen atoms combine to form liquid water
- d. The temperature of water molecules decreases

2. Which of the following is the largest freshwater reservoir

- ☒ a. The atmosphere
- ☒ b. Oceans
- c. Glaciers
- ☒ d. Lakes and streams

3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?

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4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.

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5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?

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A40967142

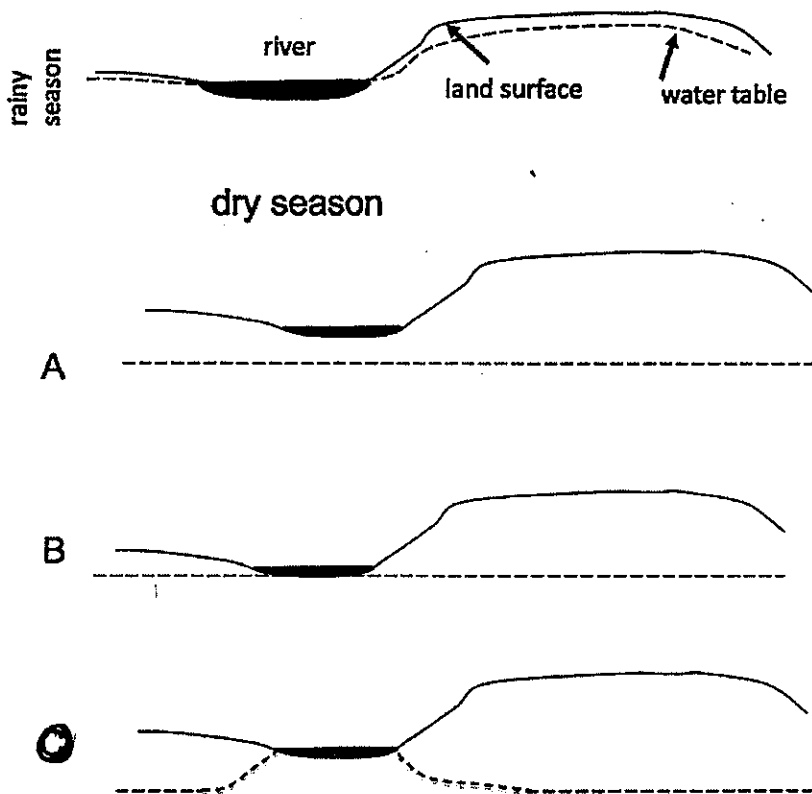
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

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☐ b. A = gravitational, B = gravitational, C = thermal
☒ c. A = gravitational, B = thermal, C = thermal
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8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

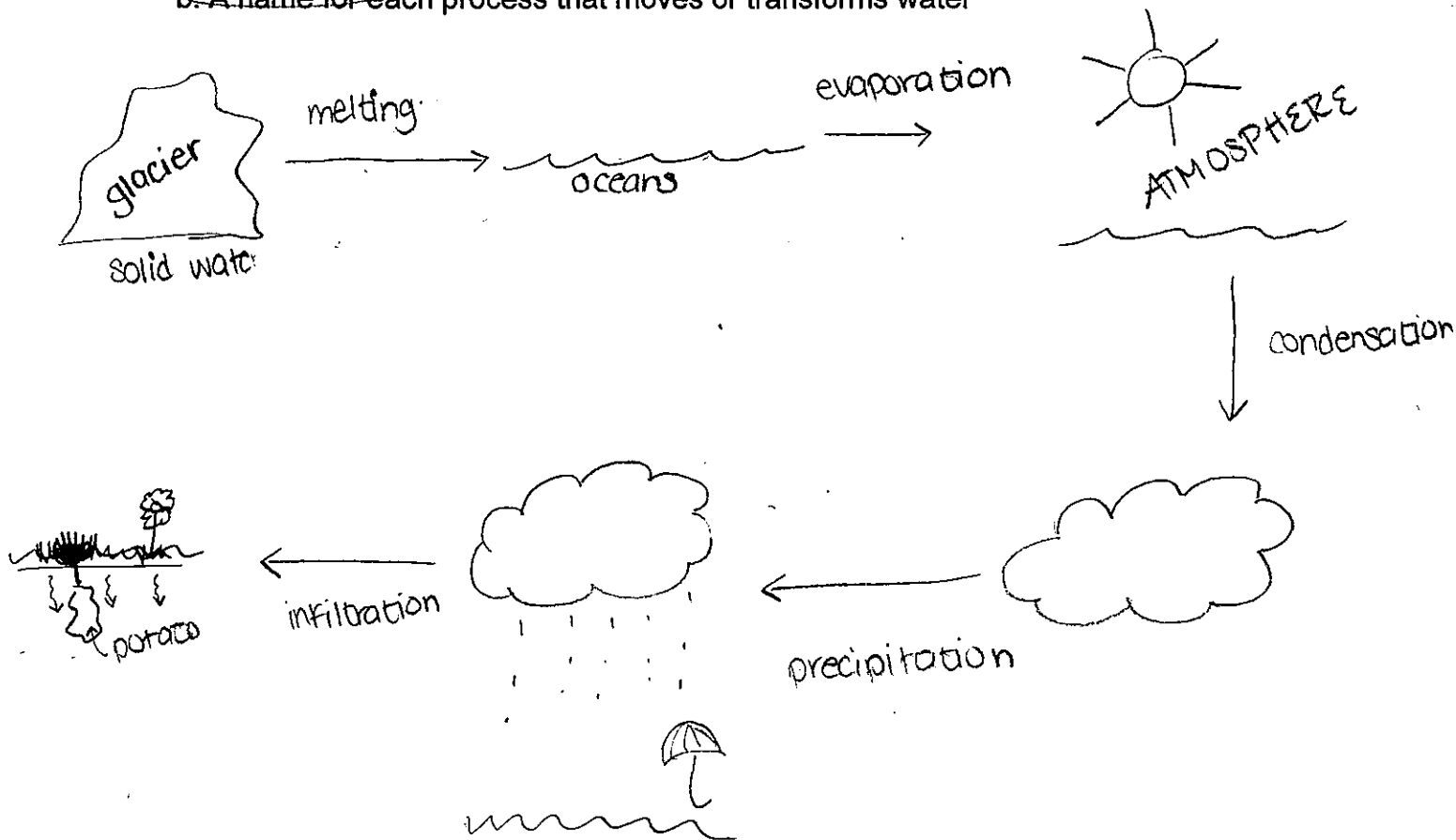


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
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10. What happens when plants respire?
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SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

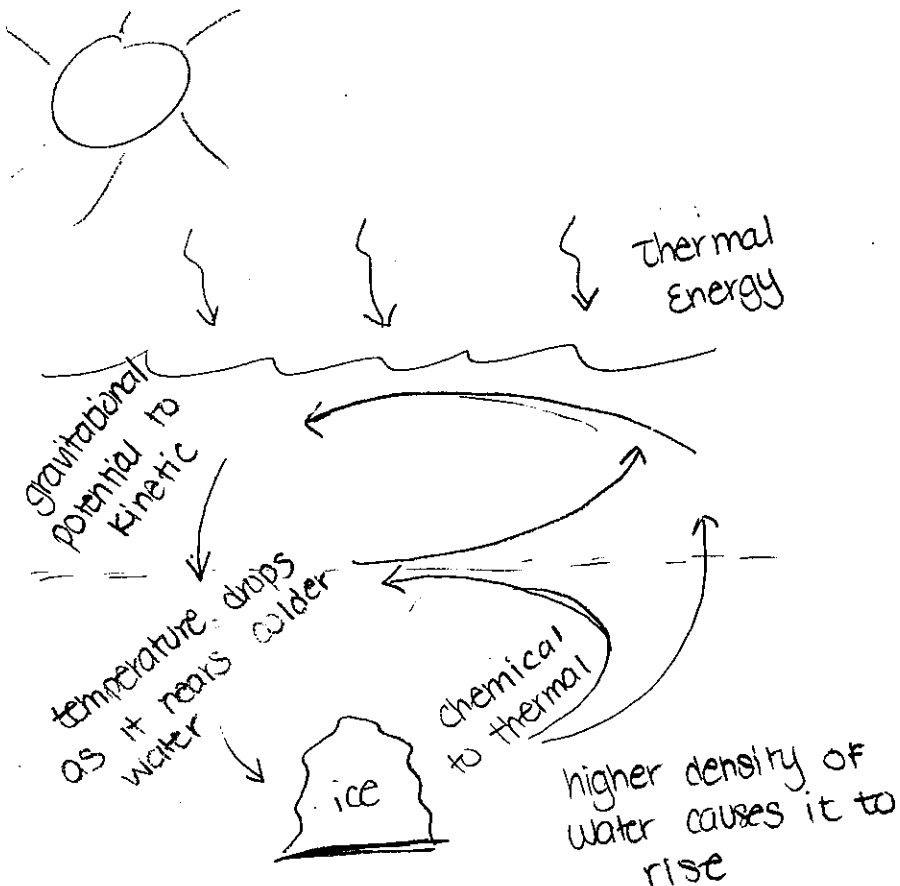
- Water phase at each step in the journey
- A name for each process that moves or transforms water



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

circulation occurs because temperature is a measure of the movement of molecules and as molecules move faster, density increases (except in water) and matter will move & change to return a system to equilibrium. Therefore, as water changes temperature, density changes (along w/ buoyancy) and in order to keep the system at equilibrium, the oceans circulate.



Warm water will sit on top. Heat from atmosphere will reach some cooler water. some will rise due to buoyancy.

if ice was more dense than water, cool water would rise.
OK ...

~~23~~ 25

EXTRA CREDIT (2 points)

- 2 EC. How are burning wood and respiration similar?
- They both destroy matter during energy conversion
 - They both convert thermal energy into gravitational energy
 - They both convert chemical energy into thermal energy
 - They both convert kinetic energy into potential energy.

30 47
YOUR SCORE:
77

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: 141930966; GROUP #: 28

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?

8

- a. Water molecules become larger
- b. Gaseous water becomes liquid water
- c. Hydrogen and oxygen atoms combine to form liquid water
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2. Which of the following is the largest freshwater reservoir

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4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of cond A _____, then becomes water in a glacier through the process of _____ B _____, and then becomes water in clouds through the process of _____ C wa p

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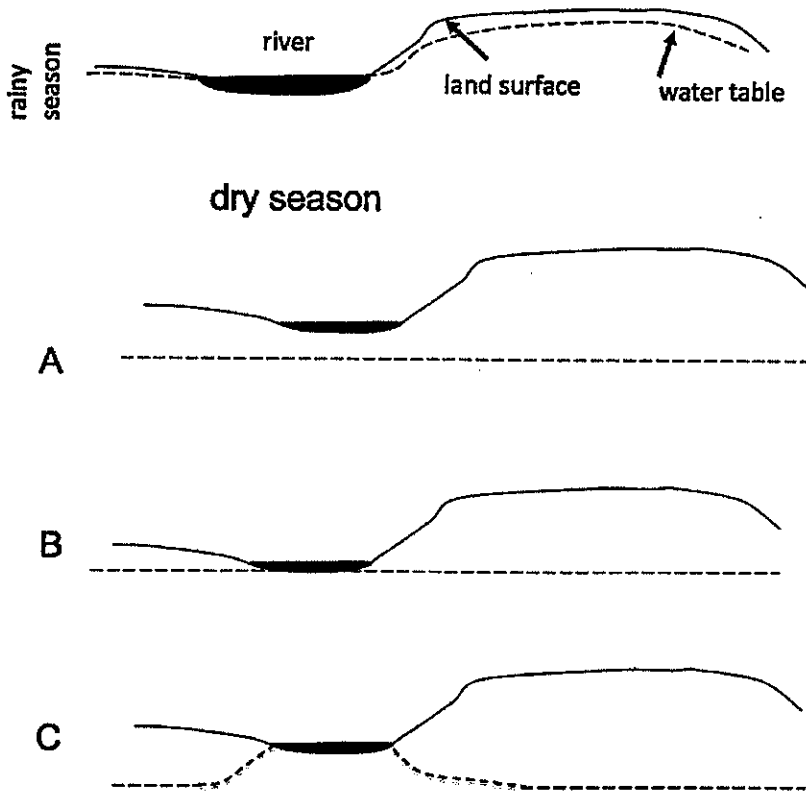
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?

- a. This is what one would predict with global warming
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7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

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c. A = gravitational, B= thermal, C= thermal
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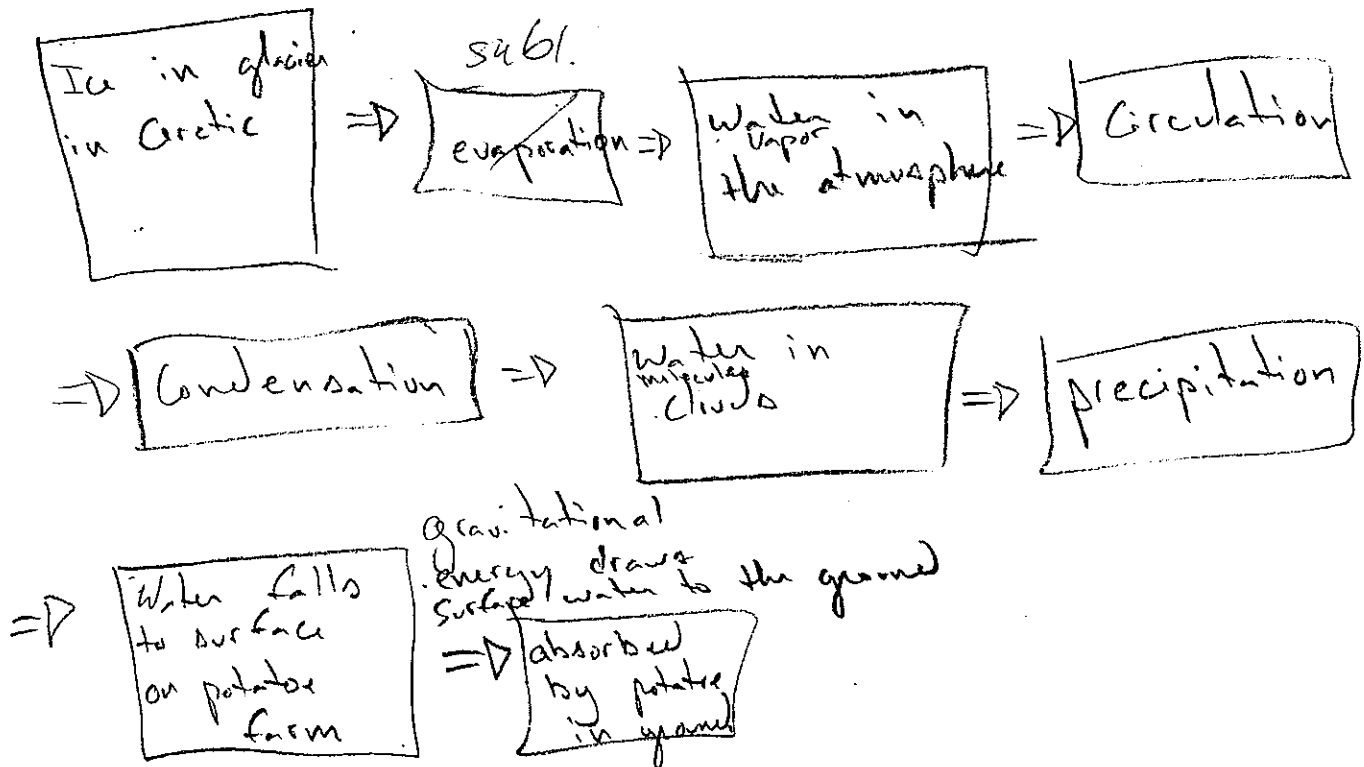
8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
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- Clear reasoning for why circulation happens. Do not simply say that a process is happening—explain why that process happens.
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If there was more salt in the polar ice than in the surrounding water, thermohaline would happen at a slower rate of circulation. Since more salt would be used in the polar ice, there would be less salt in the ocean water than there is now. This would reduce buoyancy, making it harder/slower for molecules to reach the area near the surface before falling back to the deeper part of the oceans.

10

I think you have the idea but I don't really know/ can't tell from what you wrote.

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

40 32

YOUR SCORE:

72

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: A40678097; **GROUP #:** 28

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

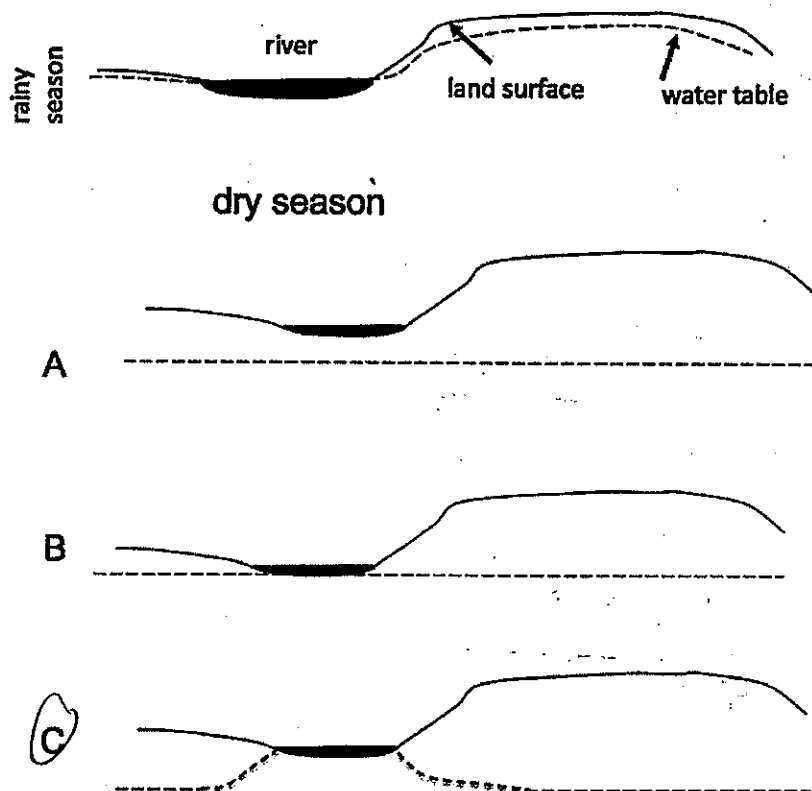
10

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- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational; B= gravitational, C= thermal
- ☒ c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



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- a. been greater
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10. What happens when plants respire?
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A40678097

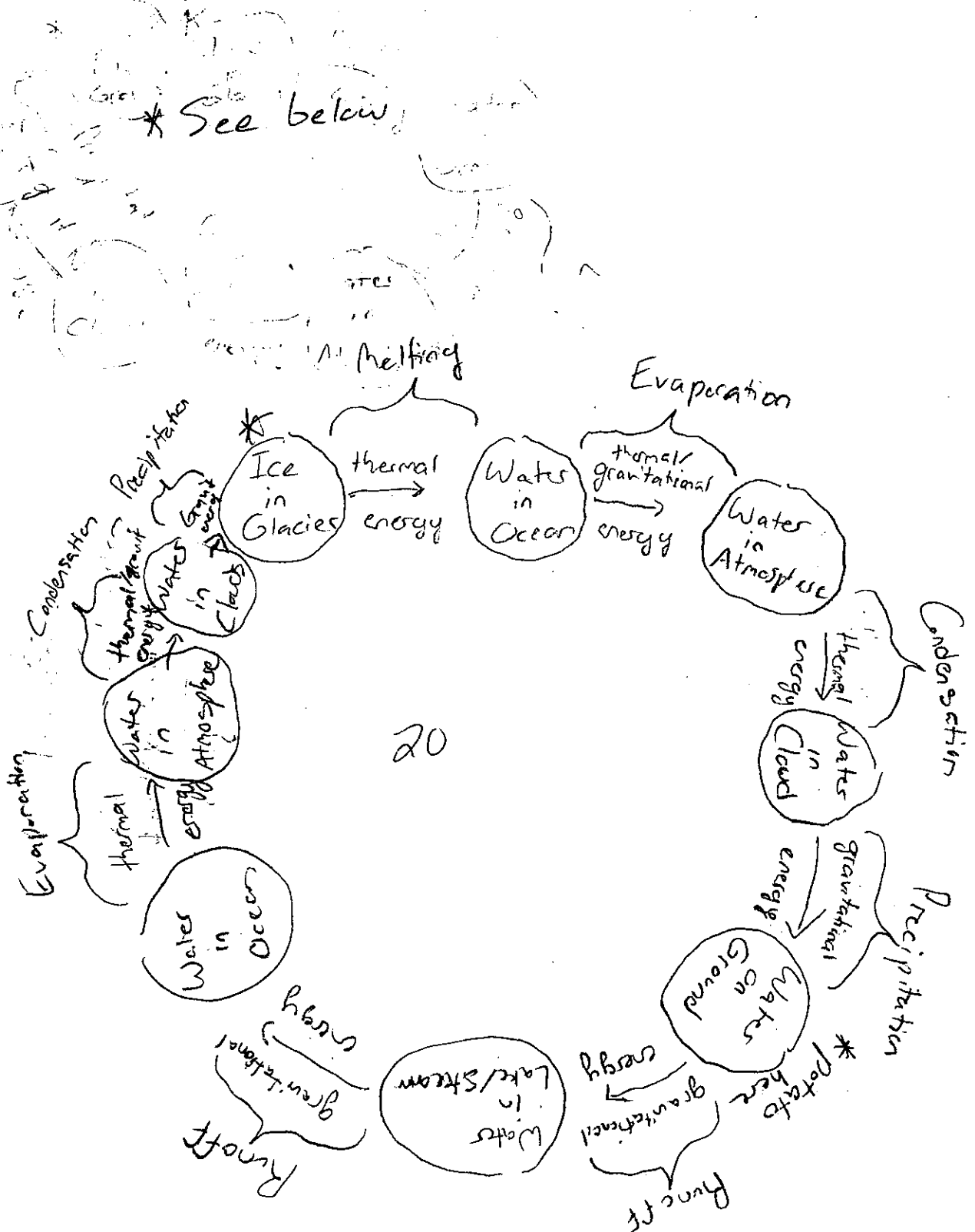
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

3

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

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- A name for each process that moves or transforms water



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.

15 A. Thermohaline circulation is due to density changes in the water which is caused by differences in salinity and temperature. Ice is typically less dense than water, but if it contained more salt, it would be more dense. Therefore, when this ice melts it would be more dense than the water around it so it would sink and there would be a greater amount of colder water where +?

B. Gravitational and thermal energy drive the movement ^{of} water, because more dense water sinks and colder water sinks, while warmer, less dense ^{NOT SO MUCH IN OCEAN} water rises. Chemical energy is also accounted for because the salinity of the water affects how dense it is.

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

50 35

YOUR SCORE:

85

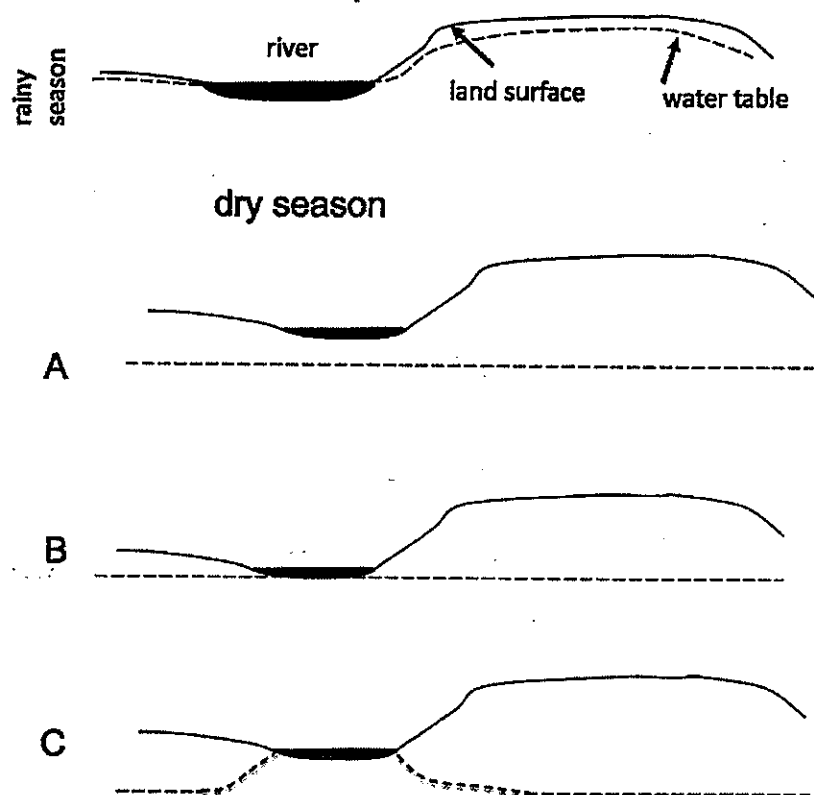
STUDENT ID #: A43836396; GROUP #: 28**MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.**

1. What happens when water molecules condense? 6
a. Water molecules become larger
b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
a. Rainfall and surface runoff into the lake
b. Seasonal high water from the Mississippi River
c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
a. A= evaporation, B= deposition, C= sublimation
b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
a. Liquid water from the pot condenses
b. Liquid water from the pot evaporates
c. Water vapor from the pot condenses
d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A= gravitational, B= gravitational, C= thermal
- c. A= gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

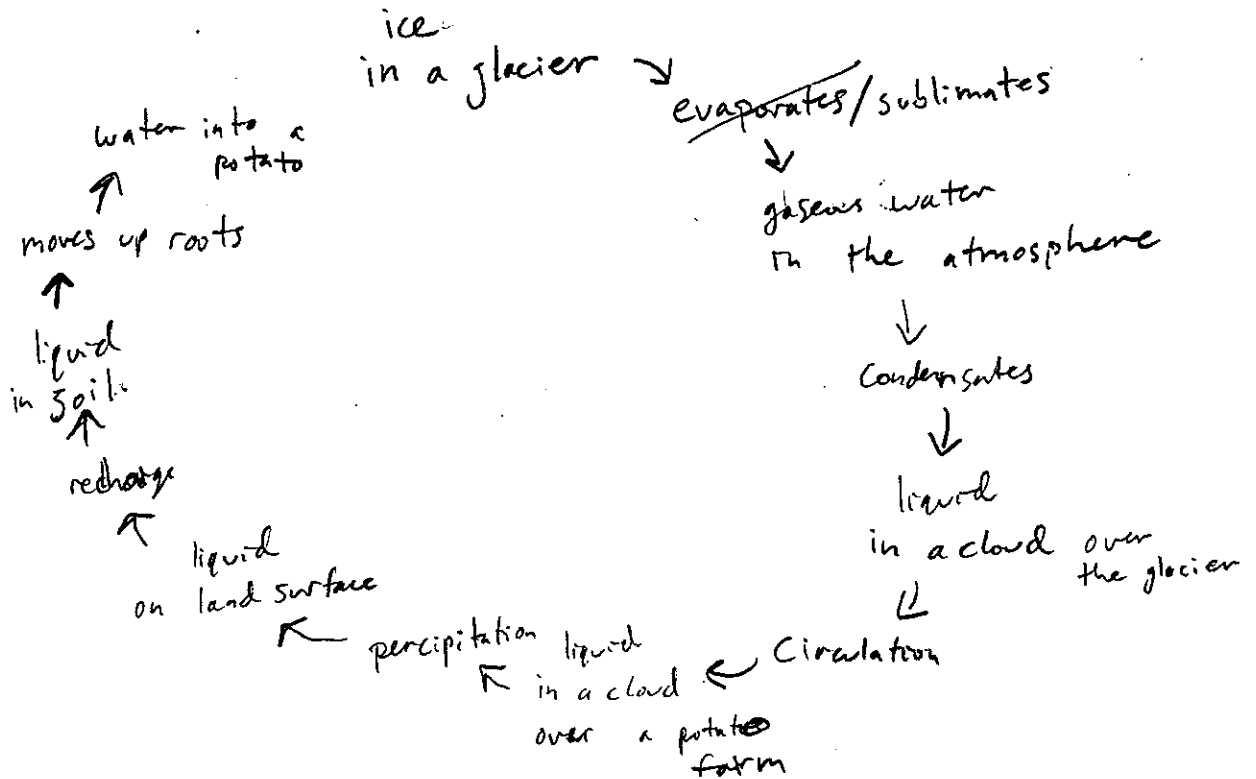
8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening — explain why that process happens.
- The energy that is causing movement or transformation of water.

The thermohaline circulation occurs, because warm water is less dense than cool water, therefore the warm water circulates on top of cool water that circulates under. Also, the salt water is more dense than fresh water. If the polar ice contained more salt than its surrounding seawater, it would warm up that ice and cause it to melt which would drastically raise sea levels world wide and it might cause water to be warmer closer to the poles. If the polar ice was full of more salt it would cause it to sink in with the rest of salt water in the sea. ^{since they have the same density now} All of this would cause the denser cooler water to be more world wide.

5

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

30 30

YOUR SCORE:

60

STUDENT ID #: A 41836115; GROUP #: 28

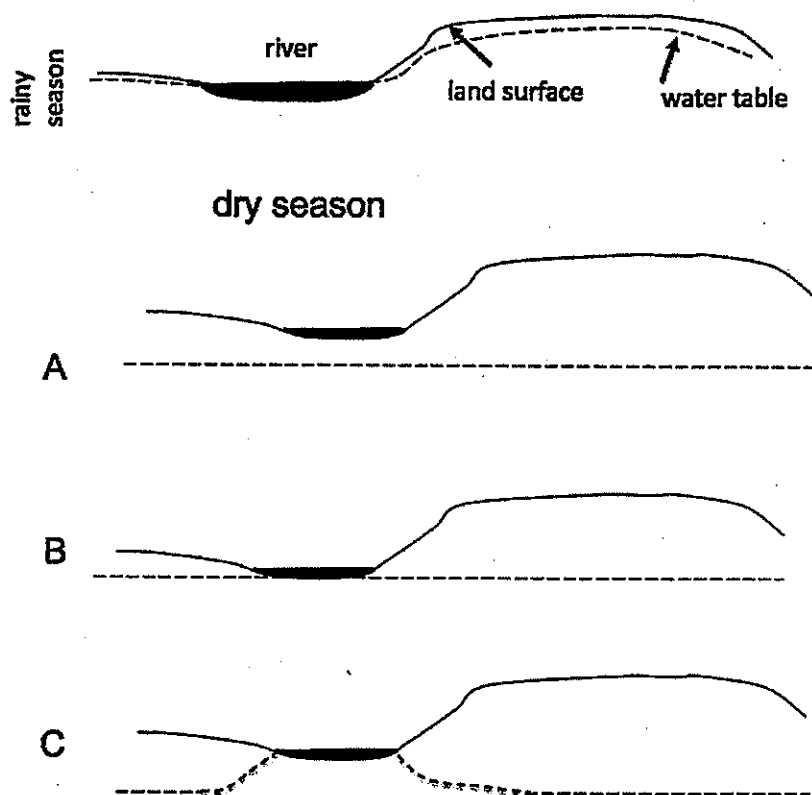
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 6
a. Water molecules become larger
b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
☒ d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
☒ c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
☒ a. Rainfall and surface runoff into the lake
b. Seasonal high water from the Mississippi River
c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A condensation, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
a. A= evaporation, B= deposition, C= sublimation
☒ b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
a. Liquid water from the pot condenses
☒ b. Liquid water from the pot evaporates
c. Water vapor from the pot condenses
d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
☒ a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
b. been less
c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

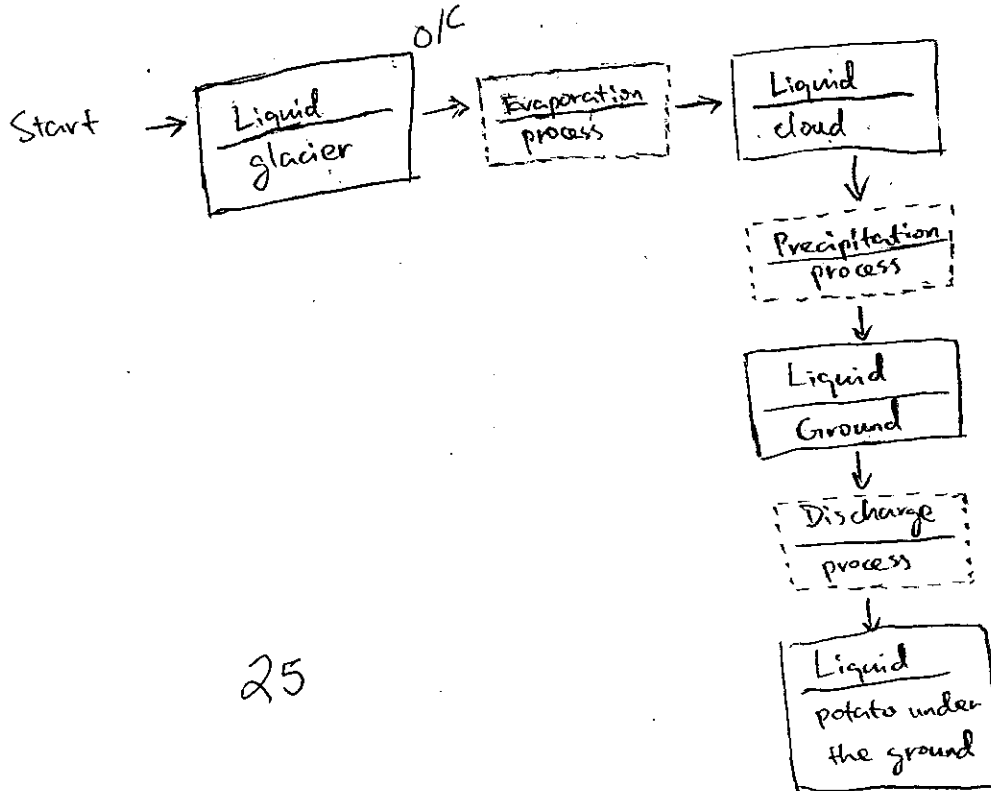
A4183618

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

3

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

Circulation happens because of the difference of density between cold seawater and warm seawater. Colder seawater are on the bottom of the sea, and warm seawater on the top of it. When wind blows, the warm seawater flows faster than colder seawater, because of warm seawater is less dense than cold seawater, also, warm seawater transformed thermal energy when it flows. If polar ice contained more salt than the surrounding seawater from which it freezes, there are more warm water flows to South and North pole from equator.

EXTRA CREDIT (2 points)

- 2 EC. How are burning wood and respiration similar?
- They both destroy matter during energy conversion
 - They both convert thermal energy into gravitational energy
 - They both convert chemical energy into thermal energy
 - They both convert kinetic energy into potential energy.

30 37

YOUR SCORE:

67

STUDENT ID #: A4267246; GROUP #: 29

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

- 10
1. What happens when water molecules condense?
 - a. Water molecules become larger
 - b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
 2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - c. Glaciers
 - d. Lakes and streams
 3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - c. Ground water from beneath the surface
 4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
 - a. A= evaporation, B= deposition, C= sublimation
 - b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - d. A = precipitation, B= freezing, C= condensation
 5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - a. Liquid water from the pot condenses
 - b. Liquid water from the pot evaporates
 - c. Water vapor from the pot condenses
 - d. Water vapor from the pot evaporates
 6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

A 42672148

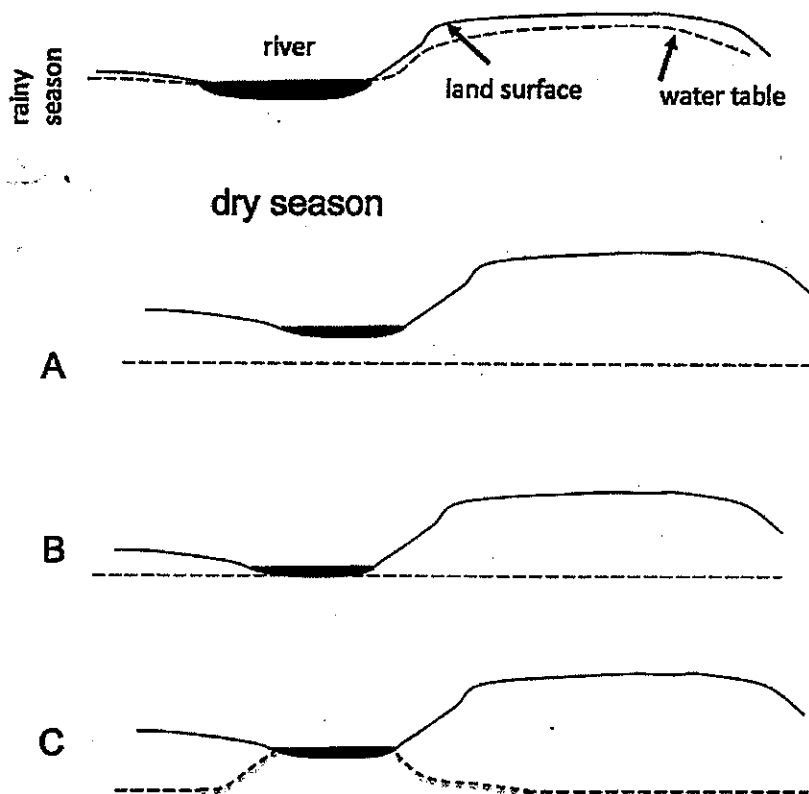
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



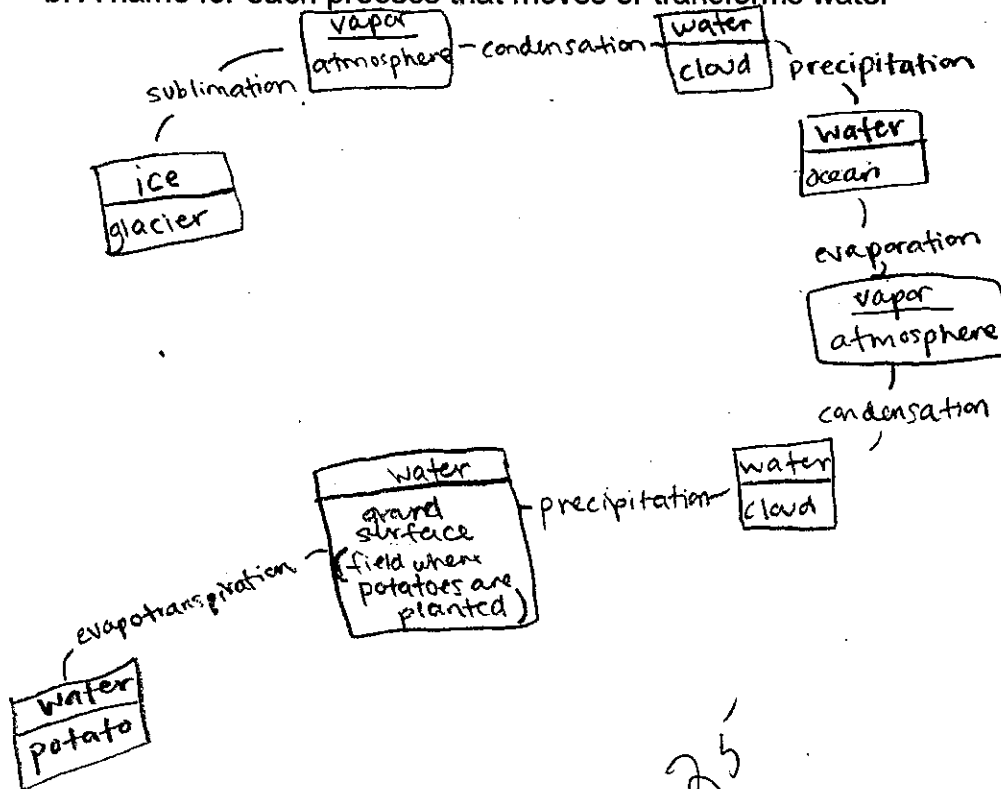
9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

A42672148

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



25

A42672148

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

Freshwater is less dense than salt water so the salt water sinks to the bottom while fresh water floats. If polar ice contained more salt than surrounding seawater from which it freezes, thermohaline circulation would decrease. The polar ice could become more dense with the added salt than the surrounding water and sink. There would be more dense water floating in the ocean that would have to rise. The polar regions would have the warm air from the equator forming still, but they wouldn't have as much warm air to rise and circulate back to the equator. The water moves by gravitational energy, but when being evaporated it is by chemical and thermal energy.

I graded this

← almost
B
20

where? Circulation happens because warm air rises and wind circulates it to colder regions on the earth. Water is carried by gravitational energy, but when evaporating and changing form it is through thermal and chemical energy. If polar ice contained more salt than surrounding sea water I believe thermohaline circulation would decrease because the more dense salty water and ice would sink leaving less water available to evaporate and circulate to the colder regions.

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

50 47

YOUR SCORE:

97



A 42515239

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: A42515239; GROUP #: 29

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

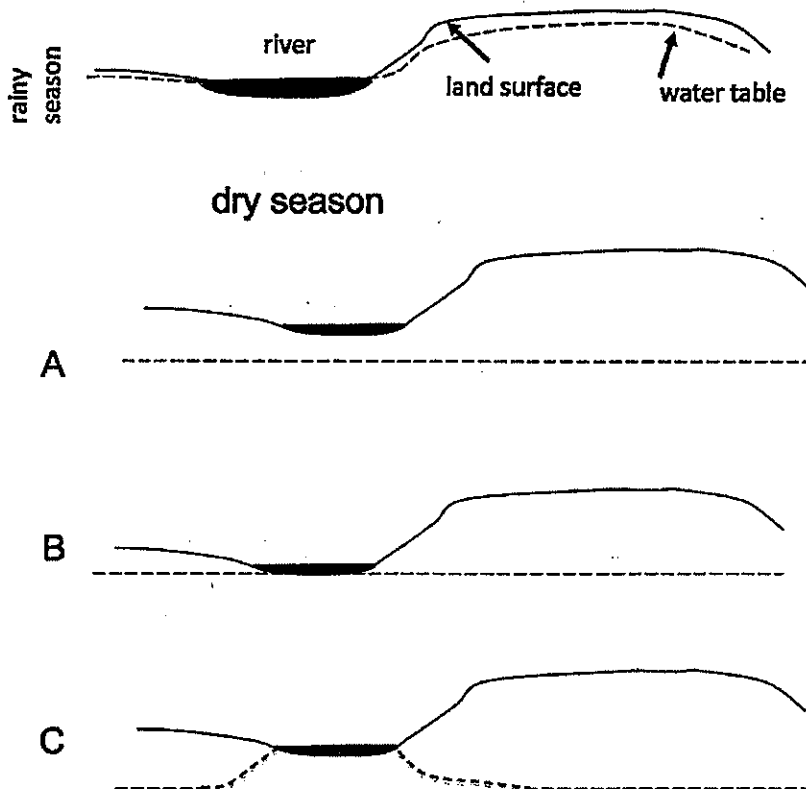
4

1. What happens when water molecules condense?
 - a. Water molecules become larger
 - b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____A____, then becomes water in a glacier through the process of ____B____, and then becomes water in clouds through the process of ____C____.
 - a. A= evaporation, B= deposition, C= sublimation
 - b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
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 - b. Liquid water from the pot evaporates
 - c. Water vapor from the pot condenses
 - d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

A42515239

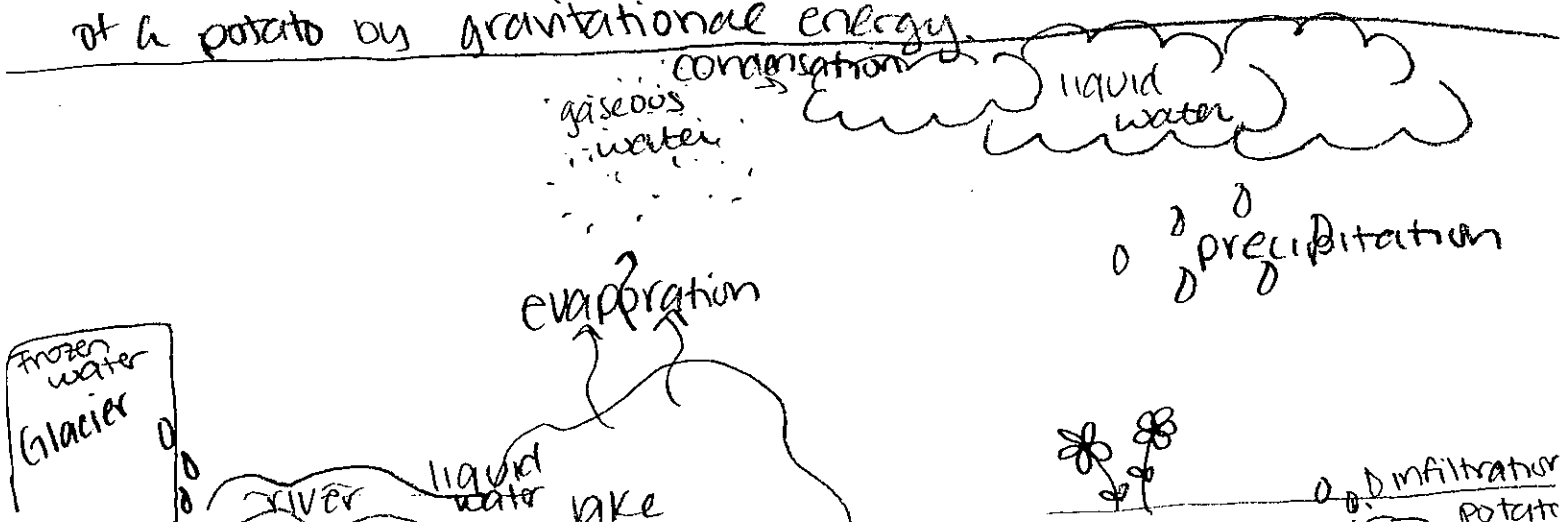
SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water

22

- 1) ^{ice} Water from glacier melts
- 2) This melted water is moved from name? the glacier into a river by gravitational energy
- 3) ^{liquid} Water from river is runoff into lake by gravitational energy.
- 4) ^{liquid} Water from lake evaporates into the atmosphere by thermal energy.
- 5) ^{gaseous} Water in atmosphere condenses into liquid water in clouds by thermal energy
- 6) Liquid water in clouds is precipitated onto the ground by gravitational energies
- 7) Liquid water on ground infiltrates land and becomes part of a potato by gravitational energy.



A42515239

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - b. The energy that is causing movement or transformation of water.

Circulation in oceans is a constant process. This water is always circulating because less dense, warmer water is rising and the more dense, cooler water is sinking. As the water begins to cool, this water sinks below, allowing the warmer water to rise.

> really not happening in oceans

If polar ice contained more salt than the surrounding seawater, this ice would be more dense, and not as much would be at the surface. This would result in more ice being submerged under the water, so more seawater would be cooling off, therefore lessening the amount of warmer water being able to rise, so the thermohaline circulation would slow down in these areas. \$ 10

~ EXTRA CREDIT (2 points)

- EC. How are burning wood and respiration similar?
- a. They both destroy matter during energy conversion
 - b. They both convert thermal energy into gravitational energy
 - c. They both convert chemical energy into thermal energy
 - d. They both convert kinetic energy into potential energy.

20 34 4

YOUR SCORE:

54

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: A43303247; GROUP #: 29 29

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?

7

- a. Water molecules become larger
- ☒ b. Gaseous water becomes liquid water
- c. Hydrogen and oxygen atoms combine to form liquid water
- d. The temperature of water molecules decreases

2. Which of the following is the largest freshwater reservoir

- a. The atmosphere
- b. Oceans
- ☒ c. Glaciers
- d. Lakes and streams

3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?

- ☒ a. Rainfall and surface runoff into the lake
- b. Seasonal high water from the Mississippi River
- c. Ground water from beneath the surface

4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A condensation, then becomes water in a glacier through the process of B precip, and then becomes water in clouds through the process of evapo C cond.

- a. A= evaporation, B= deposition, C= sublimation
- ☒ b. A = condensation, B= precipitation, C= evaporation
- c. A= sublimation, B= precipitation, C= evaporation
- d. A = precipitation, B= freezing, C= condensation

5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?

- ☒ a. Liquid water from the pot condenses
- b. Liquid water from the pot evaporates
- c. Water vapor from the pot condenses
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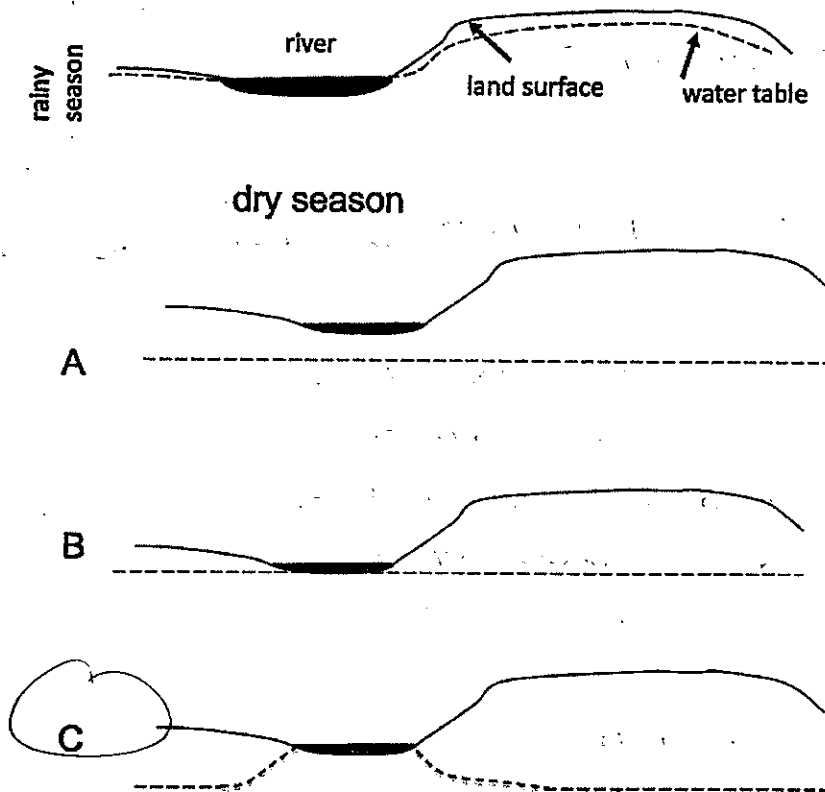
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?

- a. This is what one would predict with global warming
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- ☒ c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of gravA energy. Water in the atmosphere becomes water in clouds as a result of thermalB energy. Water in clouds becomes water in the atmosphere as the result of thermalC energy.

- a. A= chemical, B= thermal, C= thermal
 b. A= gravitational, B= gravitational, C= thermal
 c. A= gravitational, B= thermal, C= thermal
 d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:

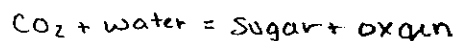
- a. been greater
 b. been less
 c. remained the same

$$\text{ice} = 0.9 \text{ g/cc} \quad \text{liquid} = 1.0 \text{ g/cc}$$

$$\frac{\text{water}}{\text{ice}}$$

10. What happens when plants respire?

- a. Plants convert biomass into energy
 b. Plants convert energy into biomass
 c. Plants release energy



potential released

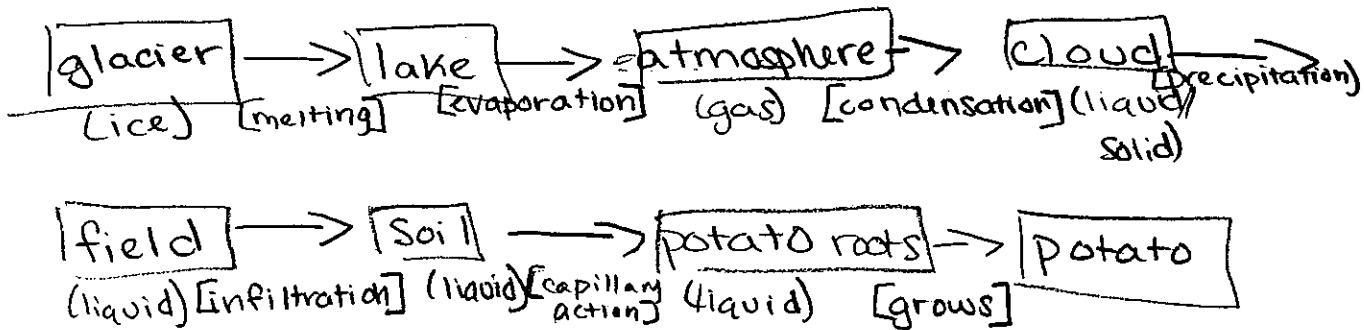
143303247

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

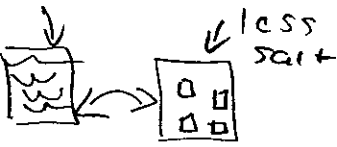
- a. Water phase at each step in the journey
- b. A name for each process that moves or transforms water

glacier → potato



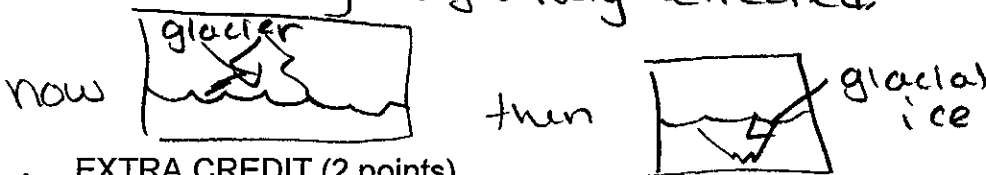
25

The water begins as ice (water in frozen state) and then melts due to an increase in thermal energy. Assuming the glacier is floating in a body of water, for example a lake, the solid ice would then melt into a liquid in the lake. Next the water evaporates due to more thermal energy and is converted into a gas in the atmosphere. From here, it condenses into a cloud which can be either in the liquid or solid state. Next due to gravitational energy the water will fall to earth through precipitation. At this point the water is liquid and has precipitated onto a potato field. The liquid water enters the soil through infiltration again due to gravity. The roots of the potato suck up the water as potatoes require much water from the soil in order to grow. The liquid water then remains in the potato awaiting the harvest.



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.

Thermohaline circulation depends on deep icy waters, It is driven by wind and ocean currents as well as the natural patterns of water. In order for the water to become icy a decrease in thermal energy must occur. Gravitational energy plays a large part in replenished ocean water lost to natural processes such as evaporation. Unlike the atmosphere, sea water is warmest near earth's surface and coldest ^{at the ocean bottom} ~~near the core~~. Water is an anomaly as ice is less dense than liquid water (floats). Sea water becomes more dense and ~~so~~ also colder the further down. If polar ice contained more salt it would become more dense than the liquid water and therefore would no longer float. The ice would sink and the organisms living in the ocean depths would be very negatively effected.



EXTRA CREDIT (2 points)

- EC. How are burning wood and respiration similar?
- They both destroy matter during energy conversion
 - They both convert thermal energy into gravitational energy
 - ☒ They both convert chemical energy into thermal energy
 - They both convert kinetic energy into potential energy.

35 37

YOUR SCORE:

72

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: 139112932; GROUP #: 27 29

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?

8

- a. Water molecules become larger
- ☒ b. Gaseous water becomes liquid water
- c. Hydrogen and oxygen atoms combine to form liquid water
- d. The temperature of water molecules decreases

2. Which of the following is the largest freshwater reservoir

- a. The atmosphere
- b. Oceans
- c. Glaciers
- ☒ d. Lakes and streams

3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?

- a. Rainfall and surface runoff into the lake
- b. Seasonal high water from the Mississippi River
- ☒ c. Ground water from beneath the surface

4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of _____ A _____, then becomes water in a glacier through the process of _____ B _____, and then becomes water in clouds through the process of _____ C _____.

- ~~a. A = evaporation, B = deposition, C = sublimation~~
- ☒ b. A = condensation, B = precipitation, C = evaporation
- ~~c. A = sublimation, B = precipitation, C = evaporation~~
- ~~d. A = precipitation, B = freezing, C = condensation~~

5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?

- a. Liquid water from the pot condenses
- ☒ b. Liquid water from the pot evaporates
- c. Water vapor from the pot condenses
- d. Water vapor from the pot evaporates

6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?

- ☒ a. This is what one would predict with global warming
- b. This is the opposite of what one would predict with global warming
- c. Predictions about global warming do not address global precipitation.

A39112932

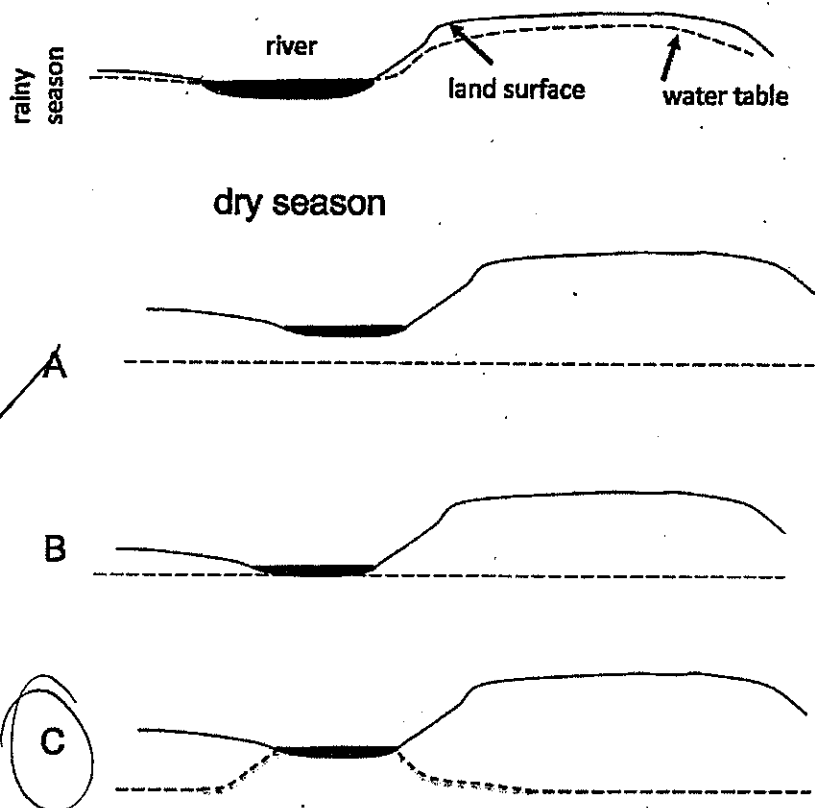
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A = chemical, B = thermal, C = thermal
b. A = gravitational, B = gravitational, C = thermal
c. A = gravitational, B = thermal, C = thermal
d. A = thermal, B = thermal, C = thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
b. been less
c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

A39112932

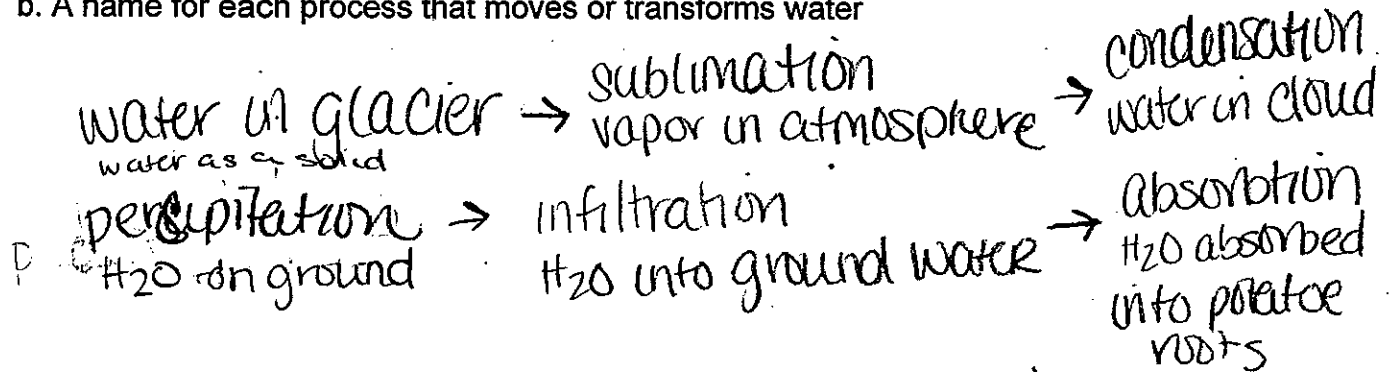
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

3

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



25

A39112932

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.

Doesn't happen!
by thermal energy

During thermohaline circulation the density of salt content in polar regions is greater because the temperature of the water is colder causing the molecules to be moving slower. Because the molecules are moving slower more salt is trapped in the ice when it freezes. The reason the water is colder is atmospheric circulation forcing warm air to rise because it is less dense than the cold air which gets pushed to the polar regions of the atmosphere causing temperature changes.

25

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- ☒ They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

40 32

YOUR SCORE:

72

STUDENT ID #: ~~Michael S. Libarkin~~; GROUP #: 3044266728

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 6
- Water molecules become larger
 - ☒ Gaseous water becomes liquid water
 - Hydrogen and oxygen atoms combine to form liquid water
 - The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
- The atmosphere
 - Oceans
 - ☒ Glaciers
 - Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
- ☒ Rainfall and surface runoff into the lake
 - Seasonal high water from the Mississippi River
 - Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____A____, then becomes water in a glacier through the process of ____B____, and then becomes water in clouds through the process of ____C____.
- A= evaporation, B= deposition, C= sublimation
 - ☒ A = condensation, B= precipitation, C= evaporation
 - A= sublimation, B= precipitation, C= evaporation
 - A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
- Liquid water from the pot condenses
 - Liquid water from the pot evaporates
 - Water vapor from the pot condenses
 - ☒ Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
- ☒ This is what one would predict with global warming
 - This is the opposite of what one would predict with global warming
 - Predictions about global warming do not address global precipitation.

A 44266728

ISP 203A: GLOBAL CHANGE

EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

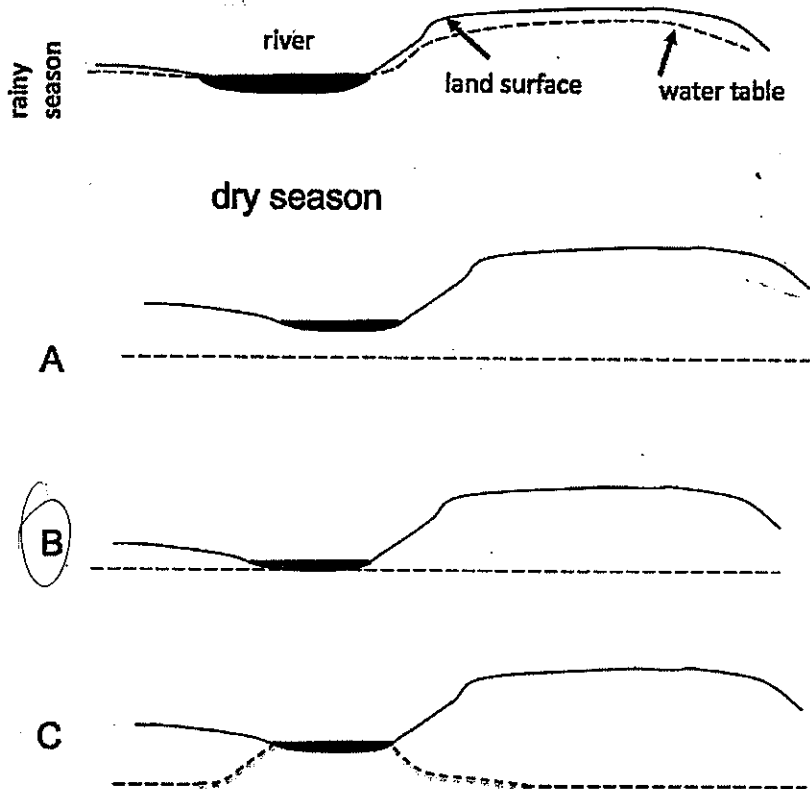
a. A= chemical, B= thermal, C= thermal

b. A = gravitational, B= gravitational, C= thermal

c. A = gravitational, B= thermal, C= thermal

d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:

a. been greater

b. been less

c. remained the same

10. What happens when plants respire?

a. Plants convert biomass into energy

b. Plants convert energy into biomass

c. Plants release energy

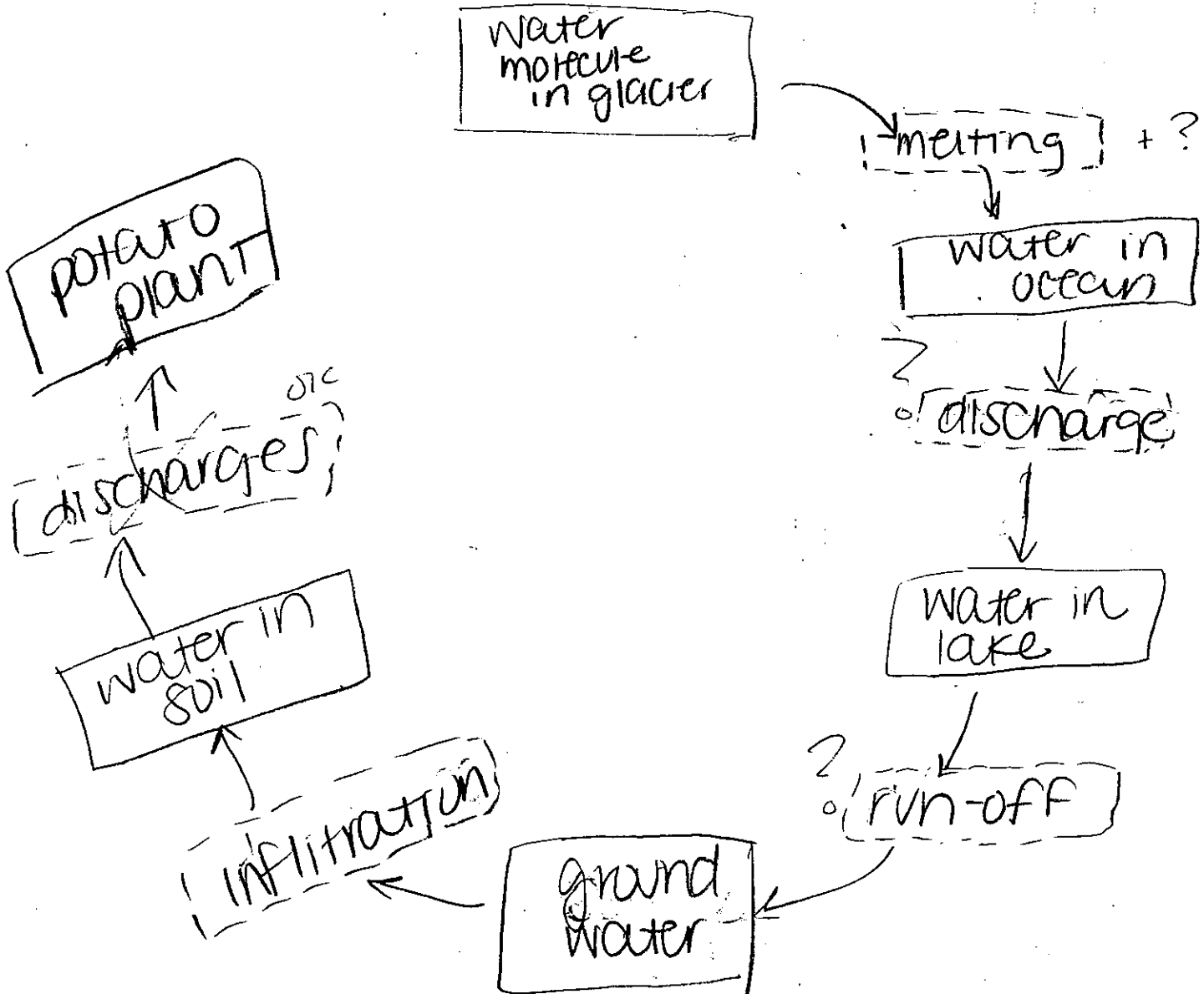
4426728

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

3

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



A44266728

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

In the haline circulation freshwater lies above the salt water because it is less dense. Therefore, if polar ice contained more salt than the surrounding seawater all the ice would sink to the bottom instead of floating. And as the air circulation moves the precipitation that will fall is freshwater allowing it to stay on top of the salty ice.

10

10

- 2 EXTRA CREDIT (2 points)
- EC. How are burning wood and respiration similar?
- They both destroy matter during energy conversion
 - They both convert thermal energy into gravitational energy
 - They both convert chemical energy into thermal energy
 - They both convert kinetic energy into potential energy.

30 27

YOUR SCORE:

57

STUDENT ID #: A41387501; GROUP #: 30

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 8
- ☒ a. Water molecules become larger
 - b. Gaseous water becomes liquid water
 - ~~c.~~ c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
- a. The atmosphere
 - b. Oceans
 - ☒ c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
- a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - ☒ c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____ A ____, then becomes water in a glacier through the process of ____ B ____, and then becomes water in clouds through the process of ____ C ____.
- ~~a.~~ a. A= evaporation, B= deposition, C= sublimation
 - ☒ b. A = condensation, B= precipitation, C= evaporation
 - ~~c.~~ c. A= sublimation, B= precipitation, C= evaporation
 - ~~d.~~ d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
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 - ☒ c. Water vapor from the pot condenses
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6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
- ☒ a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
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A41387561

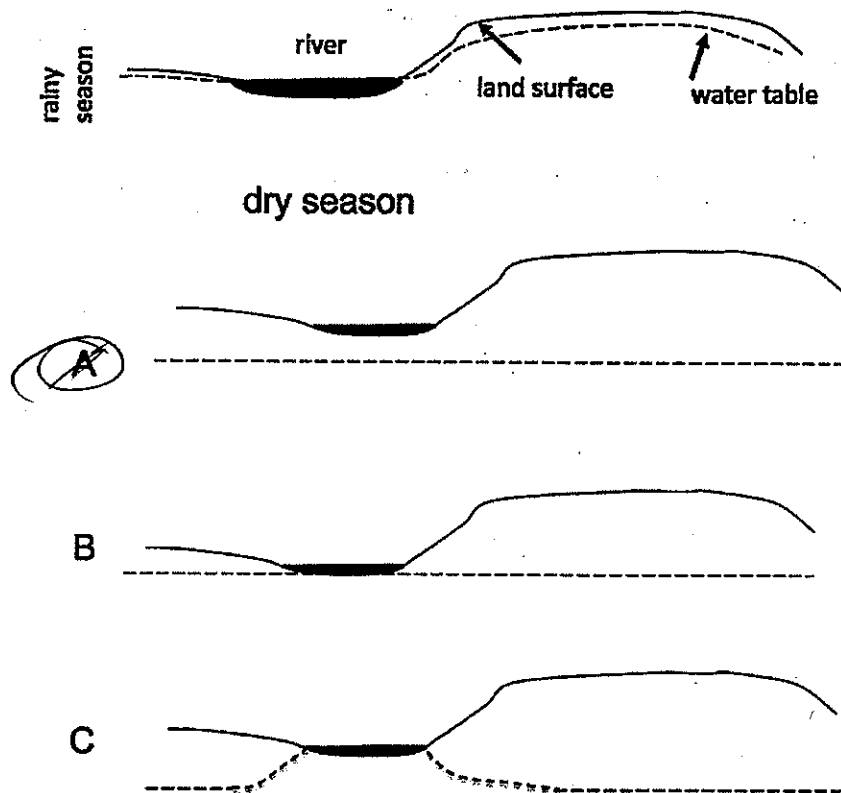
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A = chemical, B = thermal, C = thermal
b. A = gravitational, B = gravitational, C = thermal
☒ c. A = gravitational, B = thermal, C = thermal
d. A = thermal, B = thermal, C = thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

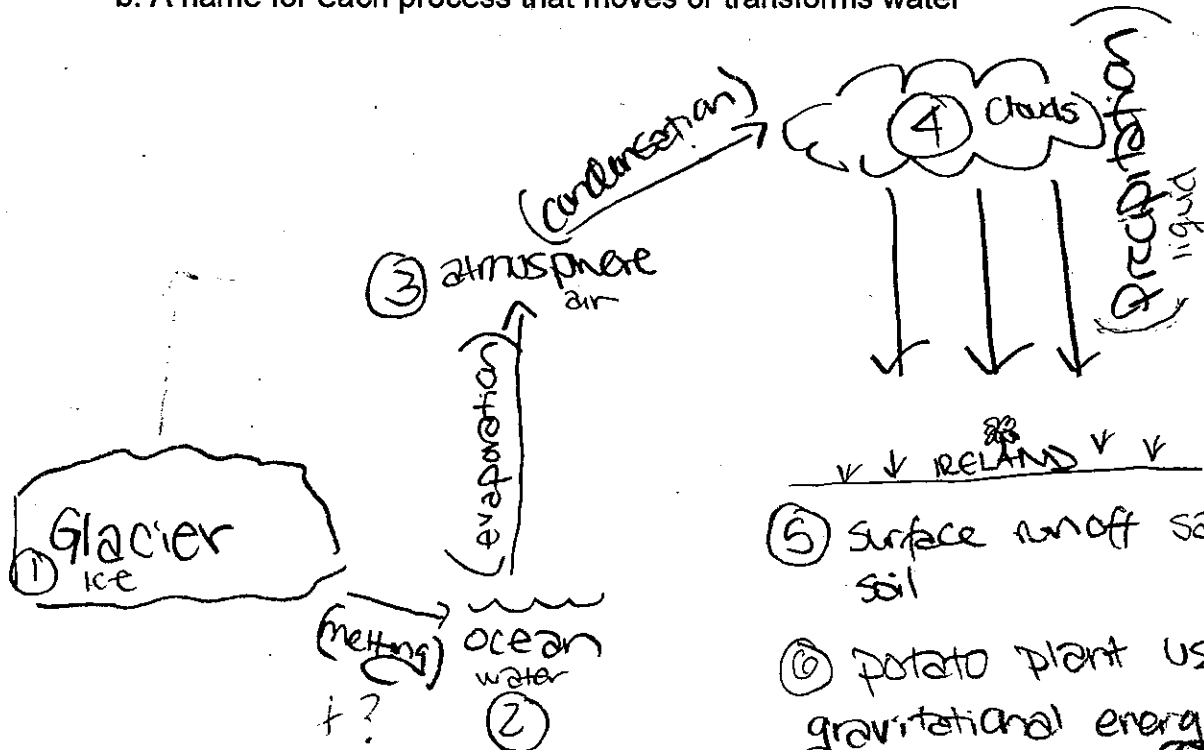


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
☒ b. been less
c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
☒ c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

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A41387661

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
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 - The energy that is causing movement or transformation of water.

when ice forms it leaves salt behind in the water.
if salt - formed ice with the water:
there would be less salt in the water near glaciers^s
thus ~~the water~~ would be less dense. less dense water
wouldn't sink to the bottom (using ^{less} gravitational energy)
therefor will be ^{more} warmed by the sun (thermal energy)
AND how would circ. change?

5

2 EXTRA CREDIT (2 points)

- EC. How are burning wood and respiration similar?
- They both destroy matter during energy conversion
 - They both convert thermal energy into gravitational energy
 - ☒ They both convert chemical energy into thermal energy
 - They both convert kinetic energy into potential energy.

40 26

YOUR SCORE:

66

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: A42894705 ; **GROUP #:** 30

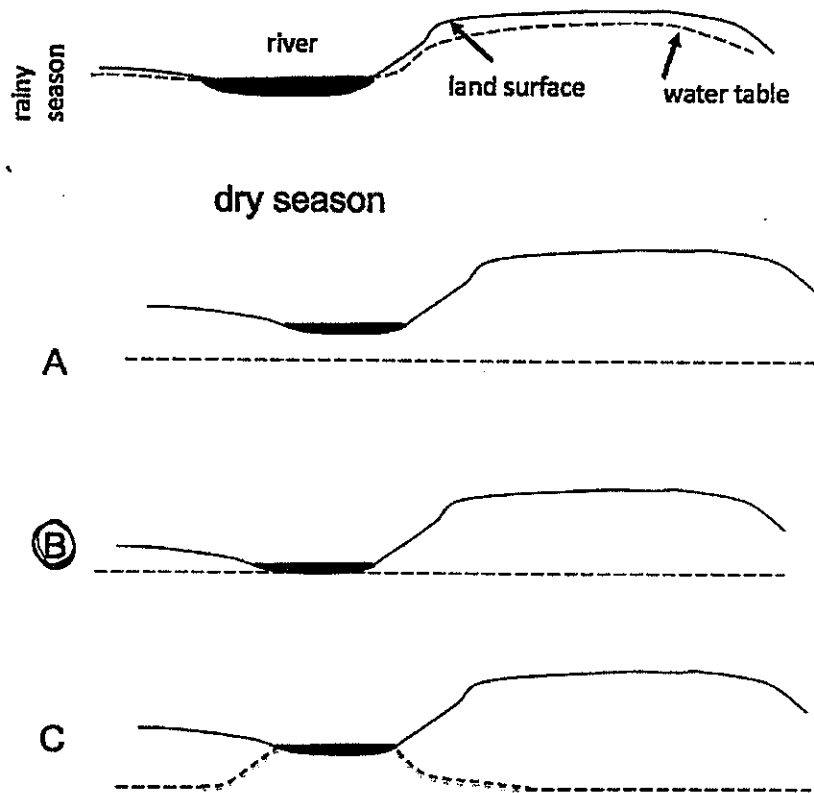
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?
a. Water molecules become larger
☒ b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
☒ c. Glaciers
d. Lakes and streams
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☒ a. This is what one would predict with global warming
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c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
Ⓒ A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

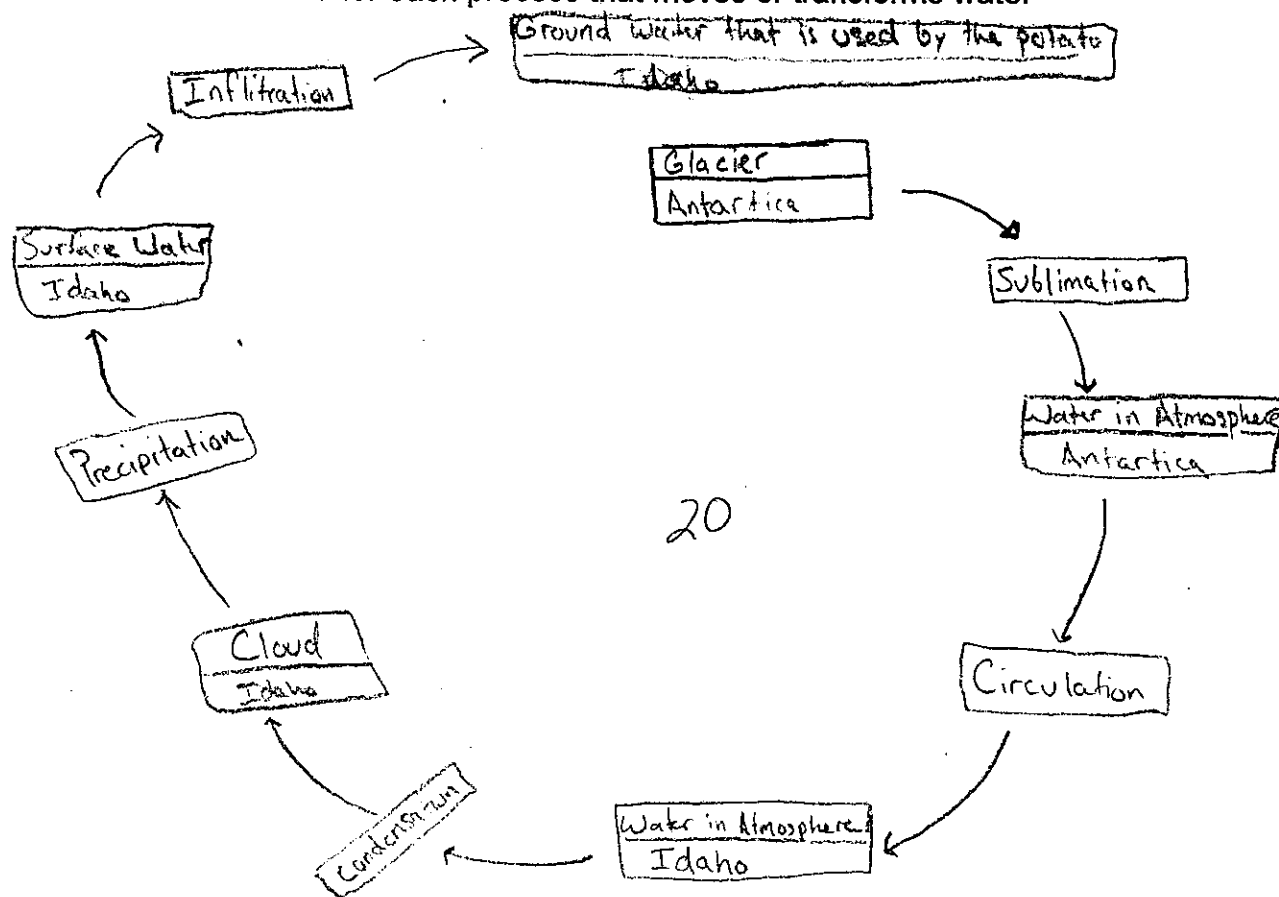


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- Ⓐ been greater
b. been less
c. remained the same
10. What happens when plants respire?
- Ⓐ Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



Sorry about the terrible Cycle drawing.

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.

Thermohaline circulation occurs because ~~a heat~~ vents at the bottom of the ocean. The water heats up causing the water molecules to be less dense than colder water and the warm water rises. As the warm water rises it becomes cooler (more dense) then falls back down to the ocean surface because gravitational energy; pulls the denser water down.

I think there would be an increase in thermohaline circulation because more salt on the polar ice caps is going to cause the ocean water to become more dense when polar ice melts. This will make gravitational energy pull the more dense water to the bottom at a faster rate than the previous less dense water.

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

40 30

YOUR SCORE:

70